

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388

RQ 250/1050 PA 452

supersedes 9.82

Komb.-Nr. 0 402 046 244

company: MAN

Values only apply to test nozzle-and-holder assembly

engine: D 2566 MKF

1 688 901 019 and fuel-injection test tubing 1 680 750 067

235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1095-1110	250	6,4	100	min. 7,9	1100	11,3-11,4
VH =	max. 46°			4,0	1175-1205			250	6,3-6,5	750	13,1-13,2
				1350	0-1,0			340-380	= 2,0	890	12,7-12,9
										960	11,7-12,0

Torque-control travel
on flyweight assembly dimension a =

0,7

mm

Speed regulation: At

1095-1110 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /~1000 strokes 2				cm ³ /~1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	-		LDA 500	0,34 bar 144,0-150,0 (141,0-153,0)	100	205,0-225,0 (201,0-229,0)
LDA 1050	1,0 bar 180,0-186,0 (177,0-189,0)			LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

7.83

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

MAN 11,1 r 3 -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P.. LS 388 mit RQ..PA 452	0,34	1,0 0 0,61	13,1-13,2 9,4-9,5 10,5-10,6 12,1-12,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113
PES 8 P 120 A 320 RS 437 RQ 750 PA 596
Komb.-Nr. 0 402 048 038
1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je $45^\circ \pm 0,5^\circ$ (0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.81

company RVI

 engine MIVS (R) 083 530
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 $2,80-2,90$
(2,75-2,95)

mm (from BDC)

Cyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	26,7 - 26,9	0,5(0,9)			
250	5,0-5,2	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,1 4,0 900	750-755 776-789 0 - 1,0	-	-	-	-	-	-

 Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

 750-755 min⁻¹

 1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7
700	267,0-269,0 (264,0-272,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u 7

2. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P5 A 509
Komb.-Nr. 0 401 876 301

supersedes 11.85
company DAF
engine DHS 825
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1 000	12,2+0,1	13,7-13,9	0,4(0,75)			
250	5,0-5,2	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.24	250	4,6	1000	12,4-12,5
		X = 5,0					250	5,0-5,2	400	12,4-12,6
							535-595	= 2,0	300	12,7-13,2
ca.58	11,2	1240-1250								
2a	4,0	1330-1360								
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 1000	0,7 bar 137,0-139,0 (134,5-141,5)	1240-1250*	LDA 600	0 bar 92,0-94,0 (89,5-96,5)	100 250	245,0-285,0 (241,0-289,0) 7,0-12,0 (4,5-14,5)	0 -	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u. 7

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 441 + RSV..P5 A 509	0,70	0 0,36 0,27	12,2-12,3 10,3-10,4 11,7-11,8 10,6-11,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2g5

1. Edition

En

PE6P 130 A 420 LS 484 RSUV 300-750 POA 347-3
Komb.-Nr. 0 401 876 325

supersedes -
company KHD
engine BA 6 M 816

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 x = 4,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
							300	5,6-5,8	280	16,3-16,9
							300-350	=2,0	450	15,0-15,1
ca. 53	14,0	790-800								
2a	4,0	820-850								
	980	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 3

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-1000 POA 348
Komb.-Nr. 0 401 870 083

supersedes-

company KHD

engine BA 12 M 816

1-10-5-7-2-11-6-8-3-12-4-9 je $30^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
ca. 67	14,0	1040-1050					325-385	=2,0	450	15,0-15,1
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 6

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 POA 350-1

1-6 - 4- 5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD

company BA 16 M 816

engine Komb.-Nr. 0 401 878 138

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0 \pm 0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 53	14,0	790-800					320-380	= 2,0	450	15,0-15,1
2a	4,0	830-860								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,7 bar	790-800 *		-	-	-	-	-	-
Test specifications on request.									
Pumps operates in tandem.									

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 40,5 h

1. Edition

En

PE 8 P 130 A 920/5 RS 489

RS 250/1000 P.1 A 422 R

1-6 - 4- 5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345 ° ±0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

KHD

company BA 16 M 816

engine

Komb.-Nr. 0 401 878 134

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,8-6,0	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	FHca.24	250	5,9	1000	15,0-15,1
	x = 5,0						250	5,8-6,0	420	16,2-16,8
VHca.58	14,0	1040-1050					400-460 = 2,0	550	550	15,0-15,1
FHmax.	4,0	1105-1135								
2a	1270	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
Test specifications on request. Pumps operates in tandem.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 7,0 c

1. Edition

En

PES 4 P 80 A 720 LS 853 RQV 350/840-900 PA 726-1

Komb.-Nr. 9 400 087 349

supersedes _

company: Caterpillar

engine: 3304 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,65-1,75}{(1,60-1,80)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	14,0+0,1	19,0-19,1	0,25(0,4)			
350	5,9-6,1	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	925	15,2-17,8	-	-	-	ca. 11	100	min. 8,0	350	0,5-1,5
ca. 66	13,0	910-920					350	5,4-5,6	500	2,4-2,6
	4,0	940-970					500	2,4-3,6	750	4,0-4,5
	1000	0 - 1,0					780-840 = 2,0		850	8,6
						③a			950	

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
880	190,0-191,0 (188,5-192,5)	910-920 *	500	181,0-183,0 (179,0-185,0)	100	235,0-255,0 = 17,6-18,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 r

7. Edition

En

PE 6 P 110 A 720 RS 3040

RQV 250-1100 PA 379 R

supersedes 3.84

Komb.-Nr. 0 401 846 710

company: Scania

engine: DS 1101

See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,3-3,4}
(3,25-3,45) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,0+0,1	16,1-16,3	0,6(0,8)			3,3 ± 0,1 (3,0-3,5)
225	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
							225	4,4-4,6	500	3,8-4,0
							310-370	= 2,0	800	5,4-5,6
ca. 64	12,0	1140-1150							1100	8,5
	4,0	1250-1280								
	1400	0 - 1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 600	0,9 bar 161,0-163,0 (159,0-165,0)	1140-1150*	LDA 1100	0,9 bar 153,5-158,5 151,0-161,0	100	240,0-290,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 128,0-132,0 (126,0-134,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

SCA 11,0 r -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3040 + RQV ... PA 379R	0,90	0 0,37 0,25	13,0 - 13,1 11,7 - 11,8 12,7 - 12,8 11,8 - 12,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 29.8.1983
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SAU 12,0 d
2. Edition

En

PES 6 P 120 A 420 LS 3049 RQ 300/1000 PA 423 DR

1 - 4 - 2 - 6 - 3 - 5 je $60^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.80

company Saurer

engine D 4 KT

225 kW

Komb.-Nr. 0 402 046 716

All test specifications are valid for Bosch Fuel Injection Pump Test Batches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,20-3,30
(3,15-3,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,7+0	1 20,0-20,4	0,5(0,8)			
300	4,4-4,6	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,7 4,0 1200	1045-1060 1090-1120 0-1,0	300	4,5	100 300 400-440=2,0	min.5,9 4,4-4,6	1000 700 800 900	10,7-10,8 11,8-11,9 11,6-11,8 11,0-11,3

Torque-control travel
on flyweight assembly dimension a =

0,7

mm

Speed regulation: At

1045-1060 min

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1000	1,2 bar 200,0-204,0 (197,0-207,0)		-	LDA 700 LDA 400	1,2 bar 215,0-219,0 (212,0-222,0) 0 bar 102,0-106,0 (99,0-109,0)	100	215,0-235,0 =13,5-13,7 mm RW

Checking values in brackets

7.83

D. Adjustment Test for Manifold Pressure Compensator

SAU 12,0 d -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS3049 +RQ..PA 423 DR	1,2	0 0,45 0,25	11,8-11,9 8,4- 8,5 10,9-11,0 9,2- 9,3

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f
2. Edition

En

PE 6 P 120 A 320 RS 3071

RQV 250-1100 PA 371/2 R

supersedes 8.80

company: Volvo

engine: TD 120 G

Komb.-Nr. 0 401 846 725

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,6-2,7
(2,55-2,75)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4±0,1	20,5-20,8	0,5(0,9)			2,5±0,1 (2,2-2,9) **
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

In the case of greater dispersion alter the delivery-valve spring pre-tension ** accordingly.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 12	100 250	min. 7,1 5,6-5,7	200 500 800 1100	0,7-0,9 2,9-3,2 5,0-5,3 7,7
ca. 46	10,4 4,0 1350	1160-1170 1235-1265 0 - 1,0				275-400 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) idle switching point		Torque-control (5) travel Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1160-1170 *	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 12,0 f - 2 -

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3071 +RQV..PA371/2R	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 120 A 320 RS 3071-E RQV 300-1050 PA 371-1

Komb.-Nr. 0 401 846 780 E

supersedes-

company: Volvo-BM

engine: TD 1206 BM

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,6-2,7}{(2,55-2,75)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	20,0-20,3	0,5 (0,9)			2,5±0,1 (2,2-2,9)
300	5,3-5,5	1,7-2,1	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 14	100	min. 6,8	250	1,1-1,3
ca. 43	10,8	1105-1115					300	5,3-5,5	520	3,1-3,5
	4,0	1190-1220					380-440	= 2,0	780	5,0-5,3
	1325	0 - 1,0							1050	7,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 200,0-203,0 (197,0-206,0)	1105-1115 *	LDA 700	0 bar 152,0-155,0 (149,0-158,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 f 6 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6P..RS 3071-E +RQV...PA 371-1	1,20	0 0,91 0,40	11,8-11,9 9,4-9,5 11,6-11,7 9,6-9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 i 3
2. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 603
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 8.81
company Daimler-Benz
OM 407 HA
engine 206 kW (280 PS)
Komb.-Nr. 0 402 046 727

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) Cyl. 6
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,1	18,4 - 18,6	0,5(0,9)			
300	5,0-5,2	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,1-20,8	650	20,0	10,7 4,0 1260	1145-1160 1190-1220 0 - 1	300	5,1	100 300 355-395	min. 6,5 5,0 - 5,2 2,0	1100 950 600	11,7 + 0,1 12,0 + 0,2 12,3 + 0,1
VH = max. 46°											

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7
LDA 1100	0,75 bar 184,0 - 186,0 (181,0 - 189,0)		LDA 600	0,75 bar 187,0 - 193,0 (184,0 - 196,0)	100	175,0 - 195,0 (171,0 - 199,0)
			LDA 500	0 bar 145,0 - 147,0 (142,0 - 150,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

MB 11,4 i 3 - 2 -

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
.. LS 3077 mit .. PA 603	0,75	0,53 0,42 0	12,3 - 12,4 11,7 - 11,8 10,8 - 11,0 10,3 - 10,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ROL 12,2 a
3. Edition

En

Testoil-ISO 4113

PE 6 P 130 A 320 RS 3078 RQ 750 PA 584
1 - 4 - 2 - 6 - 3 - 5 je $60^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 8.81
company Rolls Royce
engine C 6 . 200 G
Komb.-Nr. 0 401 846 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,4-3,5$ mm (from BDC)
(3,35-3,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	26,7 - 27,1	0,5(0,9)			
300	4,9-5,0	3,8 - 4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,7 4,0 850	750-755 772-780 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7
700	267,0 - 271,0 (264,0 - 274,0)	-	-	-	100	290,0-340,0

Checking values in brackets

8.83

BOSCH

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RVI 12,0 b
2. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 3082 RQ 750 PA 597

Komb.-Nr. 0 402 046 723

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 8.81

company RVI

engine MIDS (R) 063540

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5 - 3,6$ mm (from BDC)
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,8+0,1	25,1 - 25,3	0,5(0,9)			
250	6,5-6,7	1,50 - 2,10	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,8 4,0 900	750-755 787-800 0 - 1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7
700	251,0 - 253,0 (248,0 - 256,0)	-	-	-	-	-

Checking values in brackets

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SSC 19,0 b

2. Edition

En

PE 6 P 110 A 320 I S 3084

RQV 300-750 PA 614

Komb.-Nr. 0 401 846 750

supersedes 4.85
company: SSCM
engine: 6 L 150
316 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,0+0,1	24,5-24,8	0,4(0,75)			
300	4,5-4,7	1,8-2,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	780	15,2-17,8	-	-	-	ca. 11	100 300	min.6,1 4,5-4,7	275 600 750	1,3-1,5 5,3-5,8 7,8-8,3
ca. 66	12,0 4,0 950	790-800 840-870 0 - 1,0				310-410 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
750	245,0-248,0 (242,5-250,5)	790-800 *	-	-	300	18,0-23,0 (15,5-25,5)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

BOSCH

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 12,0 d

2. Edition

En

PE 6 P 120 A 320 RS 3088 Z RSV 200-900 P4/421 R
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 12.82
company Volvo-Penta
engine TMD 120 B
Komb.-Nr. 0 401 876 725

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	11,7+0,1	19,3-19,7	0,5 (0,9)			2,5 [±] 0,1 (2,2-2,9)
250	3,6-3,8	1,6-2,0	0,5 (0,8)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.22	250	3,2	-	-
	X = 4,0									
ca.53	10,7	940- 950					250	3,6-3,8		
2a	4,0	970-1000					300-360	= 2,0		
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to .) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	193,0-197,0 (191,0-199,0)	940-950*	900	193,0- 197,0 (190,0-200,0)	100	390-440 = 20,0- 21,0 mmRW		250	3,7

Checking values in brackets

* 1 mm less control rod travel than col 2

8.83

BOSCH

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ① and Governors

PE 12 P 110 A 520/6 LS 3090-1

RQV 300-750 PA 614

supersedes 12.82

Komb.-Nr. 0 401 830 700

company. SSCM

1 - 8 - 5 - 10 - 3 - 7 - 6 - 11 - 2 - 9 - 4 - 12

engine. POYAUD V 12-150

0 -37,5- 60-97,5-120-157,5-180-217,5-240-277,5-300-337,5° ± 0,5° (± 0,75°)

530 kW (720 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 - 2,9
(2,75-2,95)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	6
750	13,3+0,1	24,6-24,9	0,4 (0,75)			
300	4,7-4,9	1,8-2,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	780	15,2-17,8	-	-	-	ca.10	100	min.6,3	300	1,3-1,5
ca.66	12,3	790-800					300	4,7-4,9	600	5,3-5,8
	4,0	835-865					325-385=2,0		750	8,1
	1000	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
750	246,0-249,0 (243,5-251,5)	790-800*	-	-	-	-	-	-
					300	18,0-24,0 (15,5-26,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,4 q

2. Edition

En

PES 6 P 120 A 820 LS 3112 RSV 350-1100 PQ/500

supersedes 1.83

Values only apply to test nozzle-and-holder assembly

company Daimler-Benz

1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine OM407A

206 kW (280 PS)

Komb.-Nr. 0 402 076 718

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC)
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	-	C, Sp. 4 u. 5	0,75(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8	-	-
	x = 3,25						420-460	= 2,0		
ca. 48	10,5	1135-1145								
2a	4,0	1215-1245								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)								
rev/min 1	cm ³ /1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 175,0-177,0 (172,0-180,0)	1135-1145*	LDA 600	0,7 bar 177,0-183,0 (174,0-186,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.83

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 11,4 q

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1) diminution difference
PES6P..LS3112 + RSV..PO/500	0,70	0,40 0,50 0	11,8 - 11,9 10,7 - 10,9 11,6 - 11,7 10,5 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 c
2. Edition

En

PES 6 P 110 A 720 RS 3149

RQV 350-1300 PA 772

Komb.-Nr. 9 400 087 334

supersedes 10.85

company: Ford

Values only apply to test nozzle-and-holder assembly

engine 6,6 l TC

1 688 901 017 and fuel-injection test tubing 1 680 750 008

165 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,25-4,35$ mm (from BDC) RW = 9,0 - 12,0 mm
(4,20-4,40)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	13,1±0,1	10,5-10,7	0,5(0,9)			
350	7,2-7,4	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1350	15,2-17,8	-	-	-	ca. 13	100	min. 9,0	350	0,6-1,3
ca. 65	12,1	1360-1370					350	7,2-7,4	500	2,3-2,7
	4,0	1505-1535					600-660 = 2,0		800	4,0-4,3
	1650	0 - 1,0				370-440			1000	5,0-5,3
						③a			1300	7,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1300	1,0 bar 105,0-107,0 (102,0-110,0)	1360-1370 *	LDA 600	1,0 bar 103,5-107,5 (91,5-109,5)	100	100,0-120,0 (96,0-124,0) =20,0-21,0 mm RW	-	-	
			LDA 500	0 bar 76,5-78,5 (73,5-81,5)	350	16,0-20,0 (13,5-22,5)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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D. Adjustment Test for Manifold Pressure Compensator

FOR 6,6 c

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 3149 + RQV..PA 772	1,0	0 0,70 0,50	13,1-13,2 11,6-11,7 12,7-12,8 12,0-12,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (- maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 16,0 d 1

1. Edition

En

PE 10 P 110 A 920/5 LS 3164 RQV 300-900 PA 790-1
Komb.-Nr. 0 401 849 724

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes -

company: KHD

engine: BF 10 L 513
218 kW/1800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	11,4+0,1	11,7-11,9	0,4 (0,75)			
300	6,4-6,6	1,2-1,8	0,45 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	920	15,2-17,8	-	-	-	ca. 18	100	min. 7,9	250	1,1-1,2
ca. 55	10,4	940-950					300	6,4-6,6	470	3,1-3,3
	4,0	985-1015							680	5,1-5,3
	1100	0 - 1,0				320-450			900	8,1
						③a				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	117,0-119,0 (114,0-122,0)	940-950*	-	-	100	135,0-165,0	650 900 800	11,9+0,1 11,4+0,1 11,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

4 R6

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 d

1. Edition

En

PES 6 P 120 A 720 LS 3167

RQV 300-1000 PA 667-2

Komb.-Nr. 0 402 046 769

supersedes

company: MAN

engine: D 2866 LE

300 kW

MAN-Nr.

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,8-3,9}{(3,75-3,95)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,6+0,1	23,4-23,6	0,5 (0,9)			
300	5,9-6,1	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 17	100 300	min. 7,5 5,9-6,1	300 500 900 1100	1,2-1,4 3,3-3,5 5,9-6,2 7,7
ca. 53	11,6 4,0 1400	1140-1150 1245-1275 0 - 1,0				330-445 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	234,0-236,0 (231,0-239,0)	1140-1150 *	-	-	100	210,0-230,0 (206,0-234,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 8 P 120 A 920/5 LS 3804 RQ 300/950 PA 474
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° + 0,5° (+0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company: Fiat

engine: 8280.22.007

280 kW

Komb.-Nr. 0 401 848 726

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5 - 3,6$
(3,45-3,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,1	995-1010	300	5,0	100	min.7,5	950	11,1-11,2
VH = max 46°				4,0	1030-1060			300	4,9-5,1	600	11,1-11,3
				1150	0 - 1,0			350-390	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 995-1010 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
Control rod travel		Control rod travel		Control rod travel		Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	mm	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7	
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	-		LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

FIA 17,2 b - 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P.. LS 3804 + RQ..PA 474	0,70		11,1 - 11,2
		0	8,3 - 8,4
		0,36	10,4 - 10,5
		0,29	8,8 - 9,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 17,2 b 1

1. Edition

En

PE 8 P 120 A 920/5 LS 3804 RQV 300-950 PA 475 R
 1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° + 0,5° (+ 0,75°)
 Values only apply to test nozzle-and-holder assembly
 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
 company: Fiat
 8280.22
 engine.

280 kW

Komb.-Nr. 0 401 848 730

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5 - 3,6$
 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			
950	8,3-8,4	C, Sp. 4 u. 5	(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	950	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	1,0-1,3
ca. 64	10,1	990-1000					300	5,9-6,1	480	3,7-4,2
	4,0	1075-1105							720	5,6-5,9
	1250	0 - 1,0							950	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	990-1000*	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

FIA 17,2 b 1 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3804 + RQV..PA 475 R	0,70	0 0,36 0,29	11,1 - 11,2 8,3 - 8,4 10,4 - 10,5 8,8 - 9,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test-Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6h2

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 900 PA 310 R
Kcmb.-Nr. 0 401 848 743
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 3.81
ccpany: Daimler-Benz
engine: OM 422 A
229 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,9 - 4,1 mm (from BDC) cyl. 8
(3,95 - 4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	17,9-18,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0	900-905	-	-	-	-	-	-
				4,0	945-955						

Torque-control travel
on flyweight assembly dimension a =

- mm

Speed regulation: At 900-905 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
850	179,0 - 181,0 (176,0 - 184,0)	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

9.83

Testoil-ISO 4113

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B12

542

Test-Specifications Fuel Injection Pumps ② and Governors

WEP 001/4 MB 14,6h

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 1050 PA 310
Komb.-Nr. 0 401 848 742
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 3.81

company: Daimler-Benz

engine: OM 422 A

228 kW (310 PS)

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 $4,0 - 4,1$
(3,95-4,15)

mm (from BDC)

cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3+0,1	17,3 - 17,5	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,3 4,0	1050-1055 1090-1105	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1050-1055 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1000	173,0 - 175,0 (170,0 - 178,0)	-	-	-	-	100	180,0 - 200,0 (176,0 - 204,0)

Checking values in brackets

9.83

Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ②

and Governors

PE 8 P 120 A 320 LS 3807 RQ 750 PA 374 R
 Komb.-Nr. 0 401 848 741
 1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 10.82
 company: Daimler-Benz
 OM 422 A
 engine: 196 kW (266 PS)

Values only apply to test nozzle-and-holder assembly
 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) cyl.8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	18,4 - 18,6	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,1 4,0	750-755 785-795	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /~1000 strokes 2	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
700	184,0 - 186,0 (181,0 - 189,0)	-	-	-	100	180,0-200,0 (176,0-204,0)

Checking values in brackets

Test-Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 g 1

En 5. Edition

PE 8 P 120 A 320 LS 3807
Komb.-Nr. 0 401 848 747

RQ 300/1150 PA 511-2

supersedes 1.83

company: Daimler-Benz

engine: OM 422 LA

276 kW (375 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,00-4,10$ mm (from BDC) Cyl. 8
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	-	C, Sp. 1u. 2	0,75			
600	-	C, Sp. 4u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel rev/min 1		Setting point rev/min 3		Test specifications Control rod travel mm 5		Setting point rev/min 7		Test specifications Control rod travel mm 10		Control rod travel rev/min 11	
600	19,1 - 20,8	600	19,9	10,6	1195-1210	300	4,3	100	min. 6,0	-	-
VH	max. 46°			4,0	1250-1280			300	4,2-4,4		
								335-375	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1195 - 1210 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 900	0,7 bar 189,0 - 191,0 (186,0 - 194,0)	-		LDA 600	0,7 bar 182,0 - 186,0 (179,0 - 189,0)	100	140,0 - 160,0 (136,0-164,0)
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

9.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

MB 14,6 g1

- 2 -

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3807 + RQ..PA 511-2	0,44	0,70 0 0,34	11,1 - 11,3 11,6 - 11,7 10,1 - 10,2 10,3 - 10,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1
3. Edition

En

PE8P120A320LS3807 RQV 300-1150PA526-2

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83

company: Daimler-Benz

OM 422 LA

engine: 276 kW (375 PS)

Komb.-Nr. 0 401 848 748

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(3,95-4,15)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	-	C, Sp. 1 u. 2	0,75			
600	-	C, Sp. 4 u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 10	100 300	min. 6,0 4,2-4,4	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 65	10,6 4,0 1350	1190-1200 1230-1260 0- 1,0				320-465				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑧		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 600	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0 (136,0-164,0)	-	-
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 1 1

- 2 -

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution + difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE8P..LS3807 + .. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,3-10,4	

when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test-Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 21,9 a 1

2. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

supersedes 3.83

company: Daimler-Benz

1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12

0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° ± 0,5° (± 0,75°)

engine OM 424 A

374 kW

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

0 401 840 704

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke		4,0 - 4,1 (3,95-4,15)		mm (from BDC)		Cyl. 12	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm	
1	2	3	4	2	3	6	
850	11,8±0,1	13,3-18,5	0,5 (0,8)				
300	4,8-5,0	1,2-2,0	0,8 (1,2)				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider		Full-load speed regulation		Idle speed regulation		Torque control	
PRG check		Setting point		Setting point		Torque control	
Control rod travel	①	Control rod travel	④	Control rod travel	⑤	Control rod travel	③
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8
-	-	-	-	10,8 4,0 1050	900-905 932-942 max. 1,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 900 - 905 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever		Control rod stop		Fuel delivery characteristics		Starting fuel delivery	
Test oil temp. 40°C (104°F)		②		③a		③b	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7	8
850	183,0-185,0 (180,0-188,0)	-	-	-	100	160,0-180,0 (156,0-184,0)	

Checking values in brackets

Test-Specifications Fuel Injection Pumps ② and Governors

WPP 00 1/4 MB 21,9a

4. Edition

En

Testoil-ISO 4113

PE 12 P 120 A 320 LS 3819

RQ 750 PA 635

supersedes 3.83

company: Daimler-Benz

engine: OM 424 A

330 kW (449 PS)

Generating sets

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 840 705

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 4,00-4,10 \\ (3,95-4,15) \end{matrix}$ mm (from BDC) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9-12,1	19,3 - 19,5	0,5(0,8)			
300	4,8-5,0	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12				
-	-	-	-	10,9 4,0 900	750-755 780-790 0 - 1,0	-	-	-	-	-	-				

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2		②		Control rod stop rev/min 3		③a		Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5		③b		Starting fuel delivery Idle speed rev/min 6		cm ³ /1000 strokes/mm 7		⑥	
700	193,0 - 195,0 (190,0 - 198,0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)	-	-	-	-

Checking values in brackets

9.83

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d 2

2. Edition

En

PE 8 P 120 A 920/4 LS 7008 X RQV 200-950 PA 547-6

Komb.-Nr. 0 402 648 815

1-2-7-3-4-5-6-8 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes 1.86

company: Saab-Scania

engine: DSC 14 02

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{4,5-4,6}{(4,45-4,65)}$ mm (from BDC) ; RW = 6,0-8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	18,7 - 18,9	0,7 (1,0)			3,3 ^{+0,1} (3,0-3,5)
225	4,5-4,7	1,4 - 1,8	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. 60	12,1 4,0 1250	990-1000 1110-1140 0 - 1,0					225 310-370	4,4-4,6 =2,0	450 700 950	3,3-3,8 5,0-5,2 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 187,0-189,0 (184,0-192,0)	990-1000 *	LDA 950	0,9 bar 181,0-189,0 (179,0-191,0)	100	250,0-300,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)	225	4,4-4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

SCA 14,2 d 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE8P..LS 7008 X +RQV..PA 547-6	0,90	0 0,29 0,24	13,1 - 13,2 11,4 - 11,6 12,7 - 12,8 12,1 - 12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
 - For combination with letter index see VDT-I-400/116
 - For sealing, see VDT-I-400/117
 - Test specifications approved by Scania on 3.5.1985
 - Start of fuel delivery-engine: 22° before TDC at RW = 6,0-8,0 mm
 - Firing sequence, engine : 1-5-4-2-6-3-7-8
- ** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 6/10 F 2400 L 116-1

0 460 406 019

Overflow temperature 45° C

supersedes 5.84

company: VWV

engine: 087 - T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	1,4-1,8 mm	0,75	
1.2 Supply-pump pressure	1500	5,7-6,3 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	26,5-27,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,0-44,0 cm ³ /1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	100	min. 42,0 cm ³ /1000 strokes	0	
1.6 Start	2675	10,0-16,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1200 0,2-1,0(0-1,3)	1500 (0,9-2,3)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9		2400 7,8-8,4
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)		2400 (0,75 bar) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /100C strokes	Charge-air press. bar (kgf/cm ²)
End stop	2825 2675 2400 1500 800 * 600	max. 6,0 (9,0-17,0) 35,6-37,6 (34,3-38,9) (42,2-46,8) 33,5-34,5 (31,0-37,0) (24,0-30,0)	0,75 0,75 0,75 0,75 0,30 0
switch-off			
mech.	2400	0	
electr.	400	0	
Idle stop	415 750	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 20 max. 30	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	2,4
AXK	21,8-23,8
BXL	9,4-12,7

Observations

- * LDA-stroke 4,2 mm
Use adjusting nut
(46) to correct.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 8,1c

En 2. Edition

PES 6 MW 90/720 RS 1005

RQV 300-1300 MW 9 DR

O 403 446 107

supersedes 3.83

company: Fiat

engine 8360.05.670

117,7 kW (160 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery 5,10-5,20

(5,05-5,25)

mm (from BDC)

RW = 5,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,2	8,9-9,1	0,3(0,5)			
300	3,8-4,0	0,95-1,35	0,3(0,5)			
800	12,4+0,2	8,9-9,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1400	15,2-17,8 0-1,0	-	-	-	ca.21	300 100	3,8-4,0 min.7,0		
ca.60°	10,8 4,0	1350-1360 1420-1460				3a	350-390=2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	89,0-91,0 (88,0-92,0)	1350-1360*	800	89,0-91,0 (88,0-92,0)	100	20,0-21,0 (min. 130)	900 1200	12,4+0,2 11,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.86

BOSCH

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Testoil-ISO 4113

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEN 0,6a

3. Edition

En

Testoil-ISO 4113

VA 2/100 H 1200 CL 162
0 460 302 006

supersedes 6.82

company Volvo-Penta
engine X2

Pre-stroke setting 0,3 mm \pm 0,02 (\pm 0,04)
plunger lift of 0.36 mm related to outlet "B".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	1000	3,5-4,3 mm		
1 2 Supply pump pressure	1000	4,9-5,4 kp/cm ²		
1 3 Full-load delivery without charge-air pressure	1000	27,5-28,5 cm ³ /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	250	7,0-13,0 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 85,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1250	9,0-17,0 cm ³ /1000 strokes		

2. Test Specifications		Checking values in brackets		
2 1 Timing device	rev/min	400-510 (370-540)	1000	1100-1250
	mm	Start	(3,2-4,6)	4,3-5,0 (4,0-5,3)
2 2 Supply pump	rev/min	200	1000	1200
	kp/cm ²	1,2-1,7 (1,0-1,9)	(4,7-5,6)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min	500		1200
	cm ³ /10 s	55-100 (40-110)		55-100 (40-110)
2 3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1270-1320 (1250-1340)	0	
		1250	(8,0-18,0)	
		1150	26,5-28,5 (25,5-29,5)	
		1000	(27,0-29,0)	
		500	18,0-21,0 (17,0-22,0)	
	Stop	1200	0	
Idle stop	Full	270-320 (250-340)	0	
		250	(6,0-14,0)	
	Start	100	mind. 85,0	
End stop		150-250		

6.86

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C1

C1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> $\alpha = 20 \pm 4^\circ$ $\beta = 25 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	<p>Pump</p> $\bar{IV} = 4,5 \text{ mm}$ Dimension \bar{IV} $\bar{V} = 24,6 \text{ mm}$ Dimension \bar{V}

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEN 0,6b

3. Edition
En

Testoil-ISO 4113

VA 2/100 H 1300 CL 162-1
0 460 302 008

supersedes 6.82
company PENTA
engine MO 7A

Pre-stroke setting $0.3 \text{ mm} \pm 0.02 (\pm 0.04)$
Setting of the pointer at a stroke of 1 mm in
relation to outlet "B".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	1000	3,5-4,3 mm		
1 2 Supply pump pressure	1000	4,9-5,4 kp/cm ²		
1 3 Full-load delivery without charge-air pressure	1000	31,5-32,5 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	250	7,0-13,0 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 85,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1350	9,0-17,0 cm ³ /1000 strokes		

2. Test Specifications		Checking values in brackets			
2 1 Timing device	rev/min	400-510(570-540)	700	1000	1100-1250
	mm	Start	1,2-2,2(0,9-2,5)	(3,2-4,5)	4,3-5,0(4,0-5,3)
2 2 Supply pump	rev/min	200		1000	1300
	kp/cm ²	1,2-1,7(1,0-2,9)		(4,7-5,6)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1300
	cm ³ /10 s	55-100(40-110)			55-100(40-110)
2 3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²	
End stop	Full	1370-1420 (1350-1440)	0		
		1350	(8,0-18,0)		
		1310-1330	Start		
		1280	28,5-30,5		
		1000	(27,5-31,5)		
		500	(31,0-33,0)		
			21,5-24,5	(20,5-25,5)	
	Stop	1300	0		
Idle stop	Full	270-320 (250-340)	0		
		250	(6,0-14,0)		
	Start	100	mind. 85,0		
End stop		150-250			

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 30 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension \bar{IV} 4,5 mm Dimension \bar{V} 24,65 mm

Test Specifications Distributor-type Fuel-injection Pumps

VE 6/11 F 1800 L 18

Overflow temperature 45° C

0 460 416 001

 supersedes 3.83
 company: Volvo
 engine:

 Setting of the pointer at a stroke of 1 mm in
 relation to outlet "A"

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm $\pm 0,02(0,04)$

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,2-3,6 mm	0,74	
1.2 Supply pump pressure	1500	6,0-6,7 bar (kgf/cm ²)	0,74	
1.3 Full-load delivery with charge-air pressure	500	47,0-49,0 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	63,5-64,5 cm ³ /1000 strokes	0,74	3,0
1.4 Idle regulation	325	8,0-12,0 cm ³ /1000 strokes	0	2,0
1.5 Full-speed regulation	100	min. 72,0 cm ³ /1000 strokes	0	
1.6 Start	2040	19,5-25,5 cm ³ /1000 strokes	0,74	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,74 bar	n = rev/min mm	1000 0,7-1,7(0,5-1,9)	1500 (2,7-4,1)	1800 4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min bar (kgf/cm ²)	400 2,0-2,7		1800 6,9-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries	Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop		2140-2220	0	0,74
		2120	max. 6,0	0,74
		2040		0,74
		1800	57,2-59,8 (18,0-27,0)	0,74
		1500	(55,8-61,2)	0,74
		* 500	(61,3-66,7)	0,74
		500	51,5-53,5 (49,1-55,9)	0,28
switch-off		500	(44,6-51,4)	0
		1800	0	
Idle stop		370-450	0	
		325	(5,5-14,5)	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.			

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,2
MS	1,5-1,7
SVS	max. 4,2
A	5,8-10,8
B	10,4-15,6

Observations

 * LDA-stroke 4,0 mm
 Use adjusting nut
 (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

En

Testoil-ISO 4113

VE 6/12 F 1350 R 64

0 460 426 016 Overflow temperature 45° C
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

supersedes 9.85
company: IHC
engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm
DHK: 1 688 901 020
172+3 bar

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1150	5,2-5,6 mm		
1.2 Supply-pump pressure	1150	5,6-6,2 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1150	84,0-85,0 cm ³ /1000 strokes		3,5 (4,5)
1.4 Idle regulation	500	14,5-20,5 cm ³ /1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1430	44,0-50,0 cm ³ /1000 strokes		
1.6 Start	100	min. 100,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,6-2,4 (1,3-2,7)	1150 (4,7-6,1)	1300 5,3-6,1 (5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1300 6,0-6,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-163)		1350 55-138 (40-158)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1540 1480 1430 1300 1150 800 500	max. 2,0 9,0-17,0 (8,0-18,0) (42,0-52,0) 80,0-83,0 (78,5-84,5) (81,5-87,5) 77,0-81,0 (76,0-82,0) 65,0-70,0 (63,7-71,3)	
switch-off			
Idle stop	570 520 500	max. 1,0 min. 4,0 (12,5-22,5)	
End stop	250 350	min. 100 max. 800	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	3,2-3,4
MS	5,7-5,9
SVS	1,0-1,2
	max. 6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

2.4 Solenoid

cut-in voltage

min. 10 V
rated voltage 12 V.

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⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FOR 2,5a

1. Edition

En

Testoil-ISO 4113

VE 4/11 F 2000 R 119 R119-1

0 460 414 007

...013

DHK 1 688 901 023

Fuel injection test tubing 6x2x450 mm

 supersedes Ford
 company: Triton
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm Overflow temperature 45° C

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,7-3,1 mm		
1.2 Supply-pump pressure	1400	5,7-6,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	F 500	33,5-34,5 cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	E 1000	39,5-40,5 cm ³ /1000 strokes		3,5 (4,0)
1.4 Idle regulation	415	9,0-11,0 cm ³ /1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	2200	15,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 70,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	See page 2
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1900-1000 min ⁻¹ Supply-pump pressure difference 2.4 - 2.8 bar
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153) 2000 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2350 2300 2200 D 2000 1000 F 500	max. 8,0 2,0-12,0 (11,5-20,5) 37,0-40,0 (35,9-41,1) (37,4-42,6) 33,5-36,5 (31,6-38,4)	
switch-off electr.	415 (Control lever in idle position)	max. 3,0	
Idle stop	415 500	(5,5-14,5) 3,5-8,5 (1,5-10,5)	
End stop	300 480	min. 40 max. 37	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF ^K _{OT}	0,6-0,8
MS	1,7-1,9
SVS	4,7
A XK	18,0-20,0
B XL	10,4-13,8

 Observations
 See page 2!

2.4 Solenoid

 cut-in voltage min. 10 Volt
 rated voltage 12 V.

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10.86

C7

C7

2.1 Timing device

$n = \text{min}^{-1}$	mm	Voltage at thermostat
1000 (10)	0.9-1.7 (0.6-2.0)	12 Volt
1200 (10)	1.7-2.7 (1.5-2.9)	12 Volt
1400 (10)	(2.7-4.1)	12 Volt
1650 (10)	4.8-5.8 (4.6-6.0)	12 Volt
1900 (10)	7.0-8.0 (6.8-8.2)	12 Volt
* 500 (11)	4.1-4.9 (3.8-5.2)	0 Volt
* 1250 (12)	5.1-7.1	0 Volt

* Note:

Screw out ball-type valve by 2 mm

Remarks:

Coordination, pump with engine piston stroke in lock position at 3 mm timing-device travel 0.64 ± 0.2 mm

Hydraulically actuated torque control stroke = 10 ± 0.1 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 SOF 2,5m

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2100 R 214

0 460 494 173

Overflow temperature 45° C

 supersedes Sofim
 company: 8144.67.2000
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02(0,04)

see VDT-W-450/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	3,5-3,9 mm		
1.2 Supply-pump pressure	1100	4,7-5,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1100	41,5-42,5 cm ³ /1000 strokes		max. 2,5
1.4 Idle regulation	400	11,0-15,0 cm ³ /1000 strokes		max. 2,5
1.5 Full-speed regulation	2350	19,0-25,0 cm ³ /1000 strokes		
1.6 Start	100	min. 60 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1100			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,8-1,6(0,5-1,9)	1100 (3,0-4,4)	2000 8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	700 3,5-4,1		2000 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	600 41-86(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2450 2350 2100 2000 1100 600	max. 3,0 6,5-13,5 (6,0-14,0) (18,0-26,0) 41,9-44,9 (41,1-45,7) (41,2-45,8) (39,7-44,3) 36,0-39,0 (34,5-40,5)	
switch-off			
Idle stop	400 450 700 1000	(9,0-17,0) 2,0- 8,0 (1,0- 9,0) 1,5- 7,5 (0,5- 8,5) max. 2,5	
Endanschlag	250 400	min. 55,0 max. 50,0	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	1,7-1,9
SVS	4,3
A	
B	

Observations

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 5,9a4
1. Edition

En

PES 6 A 80 D 320 RS 1271 RSV 350-1500 A0B 2207 R

Komb.-Nr. 9 400 085 250

supersede

company MWM

engine D 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3
(2,15-2,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1500	9,5-9,6	5,5-5,6	0,25(0,4)			
350	6,9-7,1	0,9-1,2	0,4(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	350	6,5	1500	9,5-9,6
	x = 1,25						100	min.19,0	500	9,5-9,7
ca. 55	8,5	1540-1545					350	6,9- 7,1	400	10,7-11,3
2a	4,0	1580-1590					430-490	2,0		
	1700	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1500	54,5-55,5 (53,0-57,0)	1540-1545*		500	40,5-42,5 (38,5-44,5)	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 3,9b3
1. Edition

PES 4 A 80 D 320 RS 1282 RSV 350-1500 AOB 2207 R

Komb.-Nr. 9 400 085 249

En

supersedes
company MWM
engine D 229-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke $\frac{2,2-2,3}{(2,15-2,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1500	9,5-9,6	5,5-5,6	0,25(0,4)			
350	6,9-7,1	0,9-1,2	0,4(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	350	6,5	1500	9,5-9,6
	$x = 1,25$						100	min. 19,0	500	9,5-9,7
ca. 55	8,5	1540-1545					350	6,9- 7,1	400	10,7-11,3
2a	4,0	1580-1590					430-490	=2,0		
	1700	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting test		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to . .) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1500	54,5-55,5 (53,0-57,0)	1540-1545*	500	40,5-42,5 (38,5-44,5)	100	19,0-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2
5.86

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 m 3

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y

EP/RSV 350-1200 A2B 713 DL

supersedes

company Daimler-Benz

OM 352

engine 114 PS/2400 min⁻¹ (1)

143 PS/2400 min⁻¹ (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	4,3-4,8	0,3			
200	6,0 15,0 9,0	1,8-2,6 10,2-11,4 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 52	1300 1360 1420	16,0 11,8 6,8	without auxiliary spring			ca. 20	350	7,5	1180	0
2a	1400 1450 1500 1620	7,2-8,6 4,8-6,4 2,6-4,8 0-1,0					100 350 500 650 780	19,0-21,0 7,3-7,7 4,4-6,8 1,4-3,6 0-1,0	800 500	0,3-0,5 0,6-0,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
(1) 1180	54,5-57,0 (53,5-58,0)	1210-1220*	800 500	50,0-53,0 (48,5-54,5) 49,5-52,5 (48,0-54,0)	100	142,0-148,0	350	7,5	

Checking values in brackets

* 1 mm less control rod travel than col 2

6.86

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Testoil-ISO 4113

C12

C12

B. Governor Settings

(2)

MB 5,7 m 3

- 2 -
(1A)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	1200 1250 1300	16,0 10,7 4,8	without auxiliary spring			ca. 15	350	6,0	1180 800 400	0 0,2-0,4 0,8-1,0
ca. 42	1200 1300 1450	ca. 5,0 ca. 1,0 0,3-1,0					100 350 600 850	19,0-21,0 5,7-6,3 1,8-3,8 0-1,0		
⑤			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
(2) 1180	72,5-74,5 (72,0-75,0)	1210-1230*	800	70,5-73,5 (69,0-75,0)	100	137,0-143,0	-	-
			⑥a 500	70,5-73,5 (69,0-75,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 m 5

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y EP/RSV 350-1300 A 2 B 713 DL

supersedes -
company Daimler-Benz
engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9,0	4,3-4,8	0,3			
200	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 52	1300 16,0 1360 11,8 1420 6,8		without auxiliary spring			ca. 20	350 7,5		1280	0
2a	1400 7,2-8,6 1450 4,8-6,4 1500 2,6-4,8 1620 0 - 1,0						100 19,0-21,0 350 7,3-7,7 500 4,4-6,8 650 1,4-3,6 780 0 - 1,0		800 0,1-0,3 500 0,2-0,4	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1280	63,0-65,0 (62,0-66,0)	1310-1320*	800	55,0-58,0 (53,5-59,5)		100	142,0-148,0	350	7,5
			500	52,0-55,0 (50,5-56,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

6.86

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 m 4

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y BR-EP/RSV 350-1400 A 2 B 713 DL

supersedes
company
engine

Daimler-Benz
OM 352
123 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,25) (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9,0	4,3-4,8	0,3			
200	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 61	1400 16,0 1450 12,7 1530 6,0		without auxiliary spring			ca. 24	350 6,5		1380 0	
2a	1480 8,4-10,8 1530 4,4-7,8 1600 1,8-5,2 1730 0 - 1,0						100 19,0-21,0 350 6,2-7,3 450 4,2-6,5 600 1,6-4,2 780 0 - 1,0		1100 0 900 0,1-0,3 700 0,5-0,7 500 0,5-0,8	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
1380	60,0-62,0 (59,0-63,0)	1410-1440*	800	54,0-57,0 (52,5-58,5)		100	142,0-148,0	350	6,5
1000	53,5-56,5 (52,0-58,0)		500	50,5-53,5 (49,0-55,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

C15

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 m 7

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y RSV 350-1100 A 2 B 2116 L

supersedes -
company OM 352 A
engine 122 PS/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2, 15-2, 25
(2, 10-2, 30) mm (from BDC)

Port closing at prestroke

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1100	10,5+0,1	6,5-6,6	0,25 (0,4)			
350	7,4-7,6	1,9-2,4	0,35 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 45	1100 10,5-10,6 9,6 1140-1150 4,0 1200-1230		without auxiliary spring			ca. 24	350	7,5	1100	10,5-10,6
	1145 9,6 1250 3,0-5,0 1400 0,3-1,7						100 350 650-7	min. 19,0 7,4-7,6 0 = 2,0	800 500	10,8-11,1 11,5-11,6
2a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	65,0-66,0 (63,5-67,5)	1140-1150 (1135-1155)	800	66,0-68,0 (65,5-68,5)	100	72,0-82,0		350	7,5
			500	66,5-68,5 (66,0-69,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 m 6

1. Edition

En

PES 6 A 80 D 410 RS 2085 Y RSV350-1200 A 2 B 2117 L
Komb.-Nr. 9 400 093 224

supersedes -
company Daimler-Benz
OM 352
engine 98 PS/2400 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	8,1-8,2	4,3-4,4	0,25 (0,4)			
350	7,5-7,6	1,4-2,0	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
ca. 48	1200 8,1-8,2 7,2 1240-1250 4,0 1275-1305		without auxiliary spring			ca.24	350 7,5		1200 8,1-8,2	
	1245 7,2 1350 2,0-4,0 1450 0,3-1,7						100 min. 19,0 350 7,4-7,6 640-700 = 2,0		700 9,0-9,3 500 9,5-9,6	
2a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
200	42,5-43,5 (41,0-45,0)	1240-1250 (1235-1255)	700	43,5-45,5 (43,0-46,0)		100	72,0-82,0	350	7,5
			500	44,0-46,0 (43,5-46,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8 i 2

1. Edition

En

PES 4 A 80 D 410 RS 2094 Z

EP/RSV 350-1300 A2B 713 DL

supersedes
company Daimler-Benz
OM 314
engine 76 PS/2600 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9,0	4,3-4,8	0,3			
200	6,0 15,0 9,0	1,8-2,6 10,2-11,6 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 52	1300 1360 1420	16,0 11,8 6,8	without auxiliary spring			ca. 20	350	7,5	1280	0
2a	1400 1450 1500 1620	7,2-8,6 4,8-6,4 2,6-4,8 0-1,0					100 350 500 650 780	19,0-21,0 7,3-7,7 4,4-6,8 1,4-3,6 0-1,0	800 500	0-0,2 0-0,2

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	10
280	58,5-60,5 (57,5-61,5)	1310-1320*	800 500	51,0-54,0 (49,5-55,5) 46,5-49,5 (45,0-51,0)	100	142,0-148,0	350	7,5	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 8,7 b

1. Edition

En

PE 6 A 85 D 420 LS 2262 Z
Komb.-Nr. 9 400 081 280

EP/RSV 300-1000 A1B 295 DR

supersedes
company KHD
engine BA6L 1114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,5-1,6$
(1,45-1,65) mm (from BDP) RW = 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9,0-9,1	5,1-5,4	0,2 (0,35)			
200	9,0-9,1	3,6-4,2	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
ca. 56	Control rod travel mm 2	Control rod travel mm rev/min 3				ca. 25	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
	1000	16,0	without auxiliary spring				300	5,5-6,0	800	0,2-0,4
	1040	12,1-12,3					100	19,0-21,0	600	0,6-0,8
	1080	7,2					300	5,8-6,2	300	0,7-0,9
2a	1070	9,0-11,0	with auxiliary spring				400	2,8-3,6		
	1100	3,7-6,4					500	1,0-3,0		
	1140	1,8-3,2					600	0-1,0		
	1220	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
980	87,5-88,5 (85,5-90,5)	1010-1020*	700	87,5-89,5 (86,0-91,0)	100	min. 120	-	-	-
800	86,5-88,5 (85,5-89,5)		500	90,5-93,5 (89,5-94,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6.3 a

1. Edition

PE 4 A 85 D 420 LS 2262 Z EP/RSV 300-1000 A1B 1035 DR
Komb.-Nr. 9 400 091 201

En

supersedes
company KHD
engine F4L 2114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6}
(1,45-1,65) mm (from BDC) Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9,0-9,1	5,1-5,4	0,3 (0,5)			
200	9,0-9,1	3,6-4,2	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1000	16,0	without auxiliary spring			ca. 25	300	5,5-6,0	800	0,4-0,6
	1040	12,1-12,3							500	0,7-0,9
	1080	7,2					100	19,0-21,0	300	0,7-1,0
2a	1070	9,0-11,0	with auxiliary spring				300	5,8-6,2		
	1100	3,7-6,4					400	2,8-3,6		
	1140	1,8-3,2					500	1,0-3,0		
	1220	0,3-1,0					600	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
980	84,0-85,0 (82,0-87,0)	1010-1030*		700	86,0-88,0 (83,5-90,5)	100	min. 120	-	-
800	84,0-85,0 (81,0-88,0)			500	max. 91,5 (max. 90,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 CAS 8,3f

1. Edition

En

PES 6 A 85 C 420 LS 2264 EP/RSV 375-1000 A2 B596DR

supersedes -

company Case

engine A 401 BD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1-4,5	0,4			
	6	1,1-1,9				
	12	7,2-8,0				
200	6	0,8-1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca.45	1020	10,8	without auxiliary spring			ca.26	375	6,5	1000	0
	1080	6,4					150	19-21	800	0,8-1,0
	1130	2,6					375	6,2-6,8	450	1,5-1,8
			with auxiliary spring				450	3,5-5,0		
2a	1040	10,4-11,0					620	0-1		
	1100	5,6-6,0								
	1220	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1000	65,0-67,0 (64,0-68,0)	1040-1055 *	650	79,5-83,5 (78,5-84,5) max. 82,5 (max. 83,5)		100	26,0-132,0	375	12,5-16,5
			550	max. 82,5 (max. 83,5)					
			1100	8,5-16,5 (7,5-17,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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5.86

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 16

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1250 A0B 2208 L

Komb.-Nr. 9 400 085 252

supersedes
company Daimler-Benz
OM 352
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,0+0,1	6,2-6,3	0,3(0,45)			
350	7,1-7,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800	0,3-1,8	-	-	-	ca. 20	350	6,7	1250	10,0-10,1
	x = 2,5						100	min.19,0	500	10,0-10,2
ca. 49	9,0	1290-1300					350	7,1-7,3	400	11,6-11,8
2a	4,0	1340-1370					430-500	= 2,0		
	1450	0,3-1,7					700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1250	61,5-62,5 (59,5-64,5)	1290-1300*	-	-	-	200	14,2-14,8 mm RW	350	7,2

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 5,1 f

1. Edition

En

PES 5 A 80 D 410/3 RS 2347 EP/RS 325/1400 AOB 699 DL
Komb.-Nr. 9 400 093 406
1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -
company KHD
engine F5L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9-2,0$
 $(1,85-2,05)$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	11,2+0,1	6,4-6,5	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100%	800	0,3-1,0	-	-	-		325	8,3	1400	11,2-11,3
	x =						300	8,4-9,1	700	11,8-12,1
							400	6,0-6,8	500	11,8-12,1
VHca.60	8,7	1400-1450					550	3,5-4,0		
PHmax.	4,0	1500-1530					1350	2,8-3,2		
2a	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1400	64,5-65,5 (63,0-67,0)	1430-1440*		700	57,0-59,0 (56,5-59,5)	100	100,0-140,0	-	-
				500	54,5-56,5 (53,5-57,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 9,6 p

En

3. Edition

PES 6 A 95 D 410 RS 2416

RQ 750 AB 1199 L

Komb.-Nr. 0 400 846 534

supersedes 10.85

company KHD

engine BF 6 L 413 FRT

112 kW/1500 min⁻¹

Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 - 2,0
(1,85-2,05)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
710	11,8+0,1	12,8 - 13,0	0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,6 3,5	750-755 781-791	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
710	127,5 - 129,5 (125,5 - 131,5)	-	-	-	100	115,0 - 125,0 (112,0 - 128,0) = 13,2 - 13,4 mm RW

Checking values in brackets

7.86

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 c 1

1. Edition

En

PES 6 A 95 D 410 LS 2420

RQ 250/1050 AB 894 DL

supersedes -

Komb.-Nr. 0 400 846 370

company: MAN

engine:

D 2556 MXUM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,25-1,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,3+0,1	10,2-10,4	0,35 (0,6)			
250	5,9-6,1	1,1-1,7	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,3 4,0	1090-1105 1135-1165	250	6,0	100 250 360-400 = 2,0	min. 7,5 5,9-6,1	1050 500 700	10,3-10,4 10,9-11,0 10,7-11,0

Torque-control travel on flyweight assembly dimension a = 0,30 mm

Speed regulation: At 1090-1105 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1050	101,5-103,5 (99,5-105,5)	-		500	max. 103,5 (max. 106,0)	100	116,5-126,5 (113,5-129,5)
				700	100,0-103,0 (97,5-105,5)		= 13,5-14,1 mm RW

Checking values in brackets

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D1

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,1 c

3. Edition

En

PES 6 A 95 D 410 LS 2420 Z, Y RQ 250/1150 AB839DL (1-3)

LS 2420 RQ 250/1150 AB869DL (4)

LS 2420 Z RQ 250/1050 AB894DL (5)

supersedes 8.77

company M A N

engine D 2556..

MXUH/MXUM (1 - 232 PS)

MUH/MUM (2 - 200 PS)

MXUH/MXUN (3 - 210 PS)

MXUM/MXUH (4 - 192 PS)

MXUM/MXUH (5 - 175 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,4 - 8,0	0,4			
200	6	3,2 - 4,2				
	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQ .. 839 DL (1)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,0-15,4 10,0-14,4 0 - 9	540	0	150 250 350 440	6,6-8,1 4,5-6,7 1,5-4,0 0	880 1020 1100	15,8-16,0 15,4-15,6 15,3-15,4

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation at 1190 - 1205 =

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7
2420	with 839 DL -20°	Sp. 6-7				
1150	120,5 - 122,5		800 500	118,5 - 121,5 max. 121,5	100	11,9 - 12,9 (14±0,3 mm RW)
40° 1150	117,5 - 119,5		800 500	116,0 - 119,0 max. 118,5		

Checking values in brackets

B. Governor Settings

RQ .. 839DL (2)

2

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,0-15,4 10,0-14,4 0 - 9	540	0	150 250 350 440	6,6-8,1 4,5-6,7 1,5-4,0 0	880 1020 1100	15,8-16,0 15,4-15,6 15,3-15,4

Torque-control travel
on flyweight assembly dimension a -

0,2

mm

Speed regulation At

1190 - 1205 =

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	Control rod travel mm
2420Z	with 839 DL - 20°	Sp. 6-7		800 500	108,0 - 111,0 max. 106,5	100 250	11,9 - 12,9 (14±0,3 mm RW) 7 mm RW
1150	106,0 - 108,0						
40° 1150	103,0 - 105,0						

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ .. 839 DL (3)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,0-15,4 10,0-14,4 0 - 9	540	0	150 250 350 440	6,6-8,1 4,5-6,7 1,5-4,0 0	880 1020 1100	15,8-16,0 15,4-15,6 15,3-15,4

Torque-control travel
on flyweight assembly dimension a -

0,2

mm

Speed regulation At

1190 - 1205 =

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	Control rod travel mm
2420Y	with 839 DL - 20°	Sp. 6-7		800 500	109,0 - 112,0 max. 112,0	100 250	11,9 - 12,9 (14±0,3 mm RW) 7 mm RW
1150	109,5 - 111,5						
40° 1150	106,5 - 108,5						

En Checking values in brackets

B. Governor Settings

RQ.. 869DL (4)

Checking of slider PRG check ①		Full load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,6-16,0 11,0-15,0 0 - 9,6 0	550	0	150 120 350 450	6,5-8,1 4,7-6,9 1,7-4,2 0	-	-

Torque control travel
on flyweight assembly dimension a =

0

mm

Speed regulation At 1190 - 1205 =

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
2420	with 869 DL - 20°	Sp. 6-7	500	max. 121,5	100	11,9 - 12,9 (14±0,3 mmRW)
1150	124,5 - 126,5					
40°						
1150	121,5 - 123,5		500	max. 118,5	250	7 mm RW

Checking values in brackets

B. Governor Settings

RQ.. 894DL (5)

Checking of slider PRG check ①		Full load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-18,3	600	16,0	1070 1100 1140 1200	14,8-15,2 8,4-13,5 0 - 8,8 0	540	0	100 250 350 440	7,1-8,1 4,7-6,9 1,6-3,9 0	750 1050	15,8-16,0 15,0-15,2

Torque control travel
on flyweight assembly dimension a =

0,3

mm

Speed regulation At 1090 - 1105 =

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
2420Z	with 894 DL-20°	Sp. 6-7	800 500	93,0 - 96,0 max. 92,5	100	11,9 - 12,9
1050	91,5 - 93,5					
40°						
1050	88,5 - 90,5		800 500	90,5 - 93,5 max. 89,5	250	7 mm RW

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 g 1

40

2. Edition

En

PE 12 A 95 D 610 LS 2449
Komb.Nr. 0 400 640 111

RQV 300-1200 AB 1105-1 L

supersedes 2.85

company: KHD

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12

engine: BF 12 L 413 F

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

326 kW/2400 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,8-1,9}{(1,75-1,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,0+0,1	10,9 - 11,1	0,35(0,6)			
300	6,4-6,6	1,1-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100	min. 8,0	250	0,6-0,9
ca. 67	10,0 4,5 1450	1240-1250 1300-1330 0 - 1,0				315-410	300	6,4-6,6	650	4,2-4,4
									1000	6,3-6,5
									1275	9,0

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 109,0-111,0 (107,0-113,0)	1240-1250 *	LDA 800	0,7 bar 109,5-112,5 (107,0-115,0)	100	126,5-136,5 (123,5-139,5)	1200	11,0+0,1
							500	11,3+0,1
							915	11,2+0,2
			LDA 500	0 bar 84,5-87,5 (82,5-89,5)			1045	11,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 g 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE 12A..LS 2449 + RQV.. AB 1105-1L	0,70	0 0,32 0,22	11,2-11,3 10,4-10,5 10,9-11,0 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 12 A 95 D 610 LS 2453 RQV 1150 AB 996 L
Komb.-Nr. 0 400 640 096

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 4.85

company: KHD

engine: F 12 L 413 F
247 kW/2300 min⁻¹
Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1110	10,2+0,1	8,9-9,1	0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

Test oil: ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 26	9,2 4,0	1150-1155 1175-1190	-	-	-	-	-	-	1050 1100 1150 1200 1220	0,5-0,9 2,7-3,1 5,5-5,8 9,0-9,1 10,5

Torque control travel a = -- mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1110	88,5-90,5 (86,5-92,5)	1150-1155*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 CAS 8,3e
1. Edition

En

PES 6 A 85 D 420 LS 2460 EP/RSV 375-1000 A2. B596DR

supersedes -
company Case
engine A 401 BD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 5
1000	9	4,1-4,5	0,4			
	6	1,1-1,9				
	12	7,2-8,0				
200	6	0,8-1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4			Lower rated speed Control lever deflection in degrees 7			3 Torque control rev/min 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
ca.45	1020 10,8 1080 6,4 1130 2,6		without auxiliary spring			ca.26	375 6,5 150 19-21 375 6,2-6,8 450 3,5-5,0 620 0-1		1000 0 800 0,8-1,0 450 1,5-1,8	
2a	1040 10,4-11,0 1100 5,6-6,0 1220 0,3-1,0		with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note: changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
1000	65,0-67,0 (64,0-68,0)	1040-1055 *	650	79,5-83,5 (78,5-84,5) max. 82,5 (max. 83,5) 8,5-16,5 (7,5-17,5)		100	26,0-132,0	375	12,5-16,5 cm ³ /1000 H.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.86

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D8

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 A 95 D 410 RS 2525 RQ 225/1200 AB 1156 L

Values apply to fuel-injection test tubing

1 680 750 015

Komb.-Nr. 0 400 646 268

supersedes 1.85

company: DAF

engine: DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,1	7,3-7,5	0,35(0,6)			
225	5,9-6,1	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	19,2-20,8 max. 46°	650	20,0	9,4	1245-1260	225	6,0	100	min. 7,5	1200	10,4-10,5
				4,0	1300-1330			225	5,9-6,1	650	11,3-11,4
				1400	0-1,0			345	385=2,0	1035	10,9-11,1
								490	max. 1,0	1100	10,5-10,8

Torque-control travel
on flyweight assembly dimension a =

0,35

mm

Speed regulation: At 1245-1260 min⁻¹1 mm less control
rod travel

C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1200	73,0-75,0 (71,0-77,0)	-	-	800	74,5-77,5 (72,0-80,0)	100	130,0-140,0 (127,0-143,0) = 19,5-21,0 mm RW

Checking values in brackets

Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 INA 3,3 a

1. Edition

En

PE 4 A 85 D 320 RS 2539
Komb.-Nr. 9 400 091 203

EP/RSV 250-1600 A2B 1109 DR

supersedes—
company INARMO
engine Cimarrón

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6} (1,45-1,65) mm (from BDG) RW = 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1500	8,6-8,7	6,2-6,3	0,3(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 70	1600 1680 1750	16,0 10,9 5,8	without auxiliary spring			ca. 24	250	5,5	1100	0,7-0,9
							250 400 550	5,7-6,3 1,3-3,6 0-1,0	800 500	1,1-1,3 1,2-1,4
2a	1700 1800 1950	7,8-10,5 1,7-4,0 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note: changed to . . . rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1500	61,5-62,5 (60,5-63,5)	1610-1620*	900	56,5-58,5 (55,0-60,0)		100	min. 120	-	-
1100	58,5-60,5 (57,0-61,0)		700	56,5-58,5 (55,0-60,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.86

Testoil-ISO 4113

D10

343

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 6,2 i

9. Edition

En

Testoil-ISO 4113

PE 6 A 90 D 320 RS 2547 RQ 250/1200 AB 1022 R

Komb.-Nr. 0 400 646 256

Values apply to fuel-injection test tubing

1 680 750 015

superseded 1.84

company DAF

engine DT 615

113 kW (153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,20-2,30}
(2,15-2,35) mm (from BDC) RW = 8,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1 - 7,3	0,3(0,45)			
250	6,9-7,1	1,1 - 1,5	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. 2,5 - 3,5 ° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,6-20,4	650	20,0	9,8 4,0 1500	1245-1265 1340-1370 0 - 1,0	250		100 min. 8,5 250 6,9-7,1 380-420 = 2,0 510 max. 1,0		-	-
VH = max. 46°											

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: At 1245-1265 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1000	0,7 bar 71,5 - 72,5 (69,5 - 74,5)		LDA 600	0 bar 51,5 - 53,5 (49,0 - 56,0)	100	135,0-145,0 (132,0-148,0) = 19,5-21,0 mm RW

Checking values in brackets

4.86

D11

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 6,2 i

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
..RS 2547 + RQ..AB 1022 R	0,70	0,20 0,12 0	10,8 - 10,9 10,6 - 10,7 9,9 - 10,1 9,8 - 10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 12

2. Edition

En

PES 4 A 90 D 410 RS 2570 RQV 300-1400 AB 1146-3 L
Komb.-Nr. 9 400 085 230

supersedes 10.85
company: Daimler-Benz
engine: OM 314 A
81,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,8+0,1	8,0-8,1	0,3(0,5)			
300	8,9-9,1	1,3-1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 16	100	min. 10,5	300	0,7-1,2
ca. 64	11,8	1440-1450				400-470	300	8,9-9,1	550	2,7-3,0
	4,0	1585-1615					740-800	= 2,0	775	4,1-4,6
	1800	0-1,0							950	5,2-5,5
									1460	8,5

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 80,0-81,0 (78,0-83,0)	1440-1450*	LDA 500	0,5 bar 74,0-76,0 (72,0-78,0)	100	73,0-83,0 (70,0-86,0)	1400	12,8+0,1
			LDA 500	0 bar 56,5-58,5 (54,5-60,5)			500	13,8+0,1
							1050	13,5+0,2
							1225	12,9+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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D. Adjustment Test for Manifold Pressure Compensator

MB 3,8 n 12

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	mm (1) diminution difference
PES 4 A..RS 2570 + AB 1146-3 L	0,5	0 0,33 0,23	13,8-13,9 12,1-12,2 13,4-13,5 12,4-12,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 IHC 9,0 a

2. Edition

En

PES 8 A 95 D 320 RS 2586 RQV 325-1400 AB1097 R

Komb.-Nr. 0 400 848 024

Suction-gallery pressure 2,5 bar

Use overflow valve 1 417 413 019

supersedes 1.83

company IHC

engine D9L

180 PS (133 kW)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 2,55-2,65 \\ (2,50-2,70) \end{matrix}$ mm (from BDC) = RW 17,2 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,6+0,1	7,2 - 7,4	0,3 (0,6)			
325	7,2-7,4	1,0- 1,4	0,3 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1430	15,2-17,8	-	-	-	ca. 10	100	min. 8,0	-	-
ca. 67	10,6 4,0 1650	1440-1450 1535-1565 0 - 1,0					325	7,2 - 7,4		
							610-670	= 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	72,0-74,0 (70,0-76,0)	1440-1450*	-	-	100	80,0-90,0 (77,0-95,0)	-	-
					325	10,0-14,0 (7,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 15

2. Edition

En

PES 6 A 90 D 410 RS 2596

RQV 300-1400 AB 1146-2 L

Komb.-Nr. 9 400 085 229

supersedes 9.85
company Daimler-Benz
engine OM 352 A
127 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1

(1,95-2,15)

mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,8+0,1	8,1-8,2	0,3(0,5)			
300	8,9-9,1	1,3-1,7	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 16	100	min. 10,5	300	0,7-1,2
ca. 64	11,8	1440-1450					300	8,9-9,1	550	2,7-3,0
	4,0	1585-1615					740-800	=2,0	775	4,1-4,6
	1800	0-1,0							950	5,2-5,5
									1460	8,5

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 81,0-82,0 (79,0-84,0)	1440-1450*	LDA 500	0,5 bar 76,5-78,5 (73,5-79,5)	100	73,0-83,0 (70,0-86,0) =14,8-15,2 mm RW	1400 500 1050 1225	12,8+0,1 13,8+0,1 13,5+0,2 12,9+0,3
			LDA 500	0 bar 62,0-64,0 (60,0-66,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.86

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

MB 5,7 v 15

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2596 +RQV..AB 1146-2 L	0,50	0 0,33 0,23	13,8-13,9 12,5-12,6 13,5-13,6 12,5-12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 p1

2. Edition

En

PE8A95D 410 LS 2608 RQ 300/1250 AB 929 L

Komb.- Nr. 0 400 648 140

1-8-7-2-6-5-4-3 je 45° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 9.84

company: KHD

engine: F8L413 F
157 kW/2500min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1}
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	8,6-8,8	0,35(0,6)			
300	6,4-6,6	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	8,3 4,0	1295-1310 1345-1375	300	6,5	100 300 410-450 =2,0	min.8,0 6,4-6,6	1250 650 945 1020	9,3-9,4 9,7-9,8 9,5-9,7 9,3-9,6

Torque-control travel
on flyweight assembly dimension a = 0,40 mmSpeed regulation: At 1295-1310 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1250	85,5-87,5 (83,5-89,5)	-	-	750	78,5-81,5 (76,0-84,0)	-	-

Checking values in brackets

7.86

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,6 a 1

1. Edition

En

PES 6 A 90 D 410 RS 2673

RQV 300-1425 AB 740-3 L

Komb.-Nr. 9 400 085 220

supersedes

company Daimler-Benz

OM 352

engine 96 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25

(2,10-2,30)

mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,7+0,1	10,4-10,5	0,3(0,5)			
300	6,6-6,8	1,2-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 12	100	min.7,9	-	-
ca. 62	12,7 4,0 1750	1445-1455 1600-1630 0-1,0				370-520	300 660-720 900	6,6-6,8 2,0 max.1,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control ⑤ travel Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	9
1400	103,5-104,5 (101,0-107,0)	1445-1455*	-	-	100	min.19,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 5,6 a

1. Edition

En

PES 6 A 90 D 410 RS 2673

RQV 300-1425 AB 740-4 L

Komb.-Nr. 9 400 085 235

supersedes

company: Daimler-Benz

OM 352-0

engine: 88 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,2+0,1	9,8-9,9	0,3(0,5)			
300	6,6-6,8	1,2-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 12	100	min. 7,9	-	-
ca. 62	12,2 4,0 1750	1445-1455 1595-1625 0-1,0				370-520 (3a)	300 660-720 900	6,6-6,8 2,0 max. 1,0		

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	97,5-98,5 (95,5-100,5)	1445-1455*	-	-	100	min. 19,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FOR 4,4 a 1

1. Edition

En

PES 4 A 95 D 410 RS 2699 RS 350/1400 A2B 2149-2 L
Komb.-Nr. 9 400 085 287
Values apply to fuel injection test tubing
1 680 750 008

supersedes
company Ford
engine FTO 4,4 L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,25-3,25 mm (from BDC)
(3,10-3,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1400	11,1+0,1	8,1-8,3	0,35 (0,6)			
350	6,4-6,6	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	FH ca. 27	350	6,5	1400	11,1-11,2
	x = 5,5								500	12,4-12,5
FH max.							300	7,2-7,8	1000	12,0-12,2
VH ca. 65	8,2	1440-1450					450	3,7-4,5	1200	11,4-11,7
2a	4,0	1525-1565					600	max. 3,7		
	1650	0,3-1,7					1350	max. 2,5		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1400	80,5-82,5 (78,5-84,5)	1440-1450*	500	83,0-86,0 (80,5-88,5)	100	108,0-118,0 = 19,0- 21,0 mm RW	-	-	-
			1000	88,0-91,0 (85,5-93,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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6.85

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 A 95 D 320 RS 2693 Z
Komb.-Nr. 0 400 846 537

RQ 300/1300 AB 1204 R

supersedes 10.85
company DAF
engine DNS 620
150 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,2+0,1	8,7-8,9	0,35(0,6)			
300	6,4-6,6	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ④				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
820	19,2-20,8	820	20,0	10,6	1343-1358	300	6,2	100	min.7,3	1290	11,6-11,7
VH =	max. 46°			4,0	1425-1450			300	6,1-6,3	850	13,2-13,3
								520-560	=2,0	965	12,7-12,9
										1060	12,2-12,4

Torque-control travel
on flyweight assembly dimension a = 0,57 mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 850	0,7 bar 87,0-89,0 (85,0-91,0)	-	LDA 1290	0,7 bar 85,0-87,0 (82,5-89,5)	100	125,0-135,0 (122,0-138,0)
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	7,0-11,0 (4,5-13,5)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

DAF 6,2 p 1

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PES 6 A..RS 2693 Z + AB 1204 R	0,7	0 0,29 0,25	12,2-12,3 11,2-11,4 12,0-12,1 11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 5,9 c 1

1. Edition

En

PES 6 A 90 D 320 RS 2701 RSV 350-1150 A 2 B 2097-2 R
Komb.-Nr. 9 400 085 286

supersedes -
company MWM
engine D 229-6
110 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,65-2,75
(2,60-2,80) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1150	9,2-9,3	6,2-6,3	0,3 (0,5)			
350	5,9-6,1	1,1-1,5	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	5,5	1150	9,2-9,3
	x = 4,25						100	min. 19,0	500	9,8-9,9
ca. 46	8,2	1190-1200					350	5,9-6,1	800	9,4-9,7
2a	4,0	1230-1260					570-630	= 2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1150	62,0-63,0 (59,5-65,5)	1190-1200*	500	53,5-55,5 (51,0-58,0)	100	19,0-21,0 mm RW	-	-	-
			800	59,5-61,5 (57,0-64,0)	350	10,5-14,5 (8,0-17,0)			

Checking values in brackets

* 1 mm less control rod travel than col 2

6.86

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MWM 5,9 e

1. Edition

En

PES 6 A 90 D 320 RS 2718

RSV 350-1500 AOB 2207-1 R

Komb.-Nr. 9 400 085 273

supersedes -

company MWM

engine TD 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,7-2,8} (2,65-2,85) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1500	10,9+0,1	8,3-8,4	0,3 (0,5)			
350	5,9-6,1	1,0-1,4	0,25(0,45)			
Port closing difference = 4,0-5,0° mm between control-rod travel 9 mm and control-rod travel 12 mm						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	350	5,5	1500	10,9-11,0
	X = 3,5						100	min. 19,0	500	10,9-11,1
							350	5,9-6,1	400	12,1-12,7
							430-490	2,0		
ca. 62	9,9	1540-1550								
②a	4,0	1600-1630								
	1700	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1500	83,0-84,0 (81,0-86,0)	1540-1550*	500	70,0-72,0 (67,5-74,5)	100	19,0-21,0 mm RW	-	-	
					350	9,5-13,5 (7,5-15,5)			

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.86

E1

E1

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 h

1. Edition

En

PES 6 A 95 D 410 RS 2722

RQV 350-1300 AB 1200 L

Komb.-Nr. 9 400 085 265

supersedes

company: FTO

Values only apply to test nozzle-and-holder assembly

engine 6,6 l TC

1 688 901 017 and fuel-injection test tubing 1 680 750 015

160 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3, 15, 3, 25
(3, 10-3, 30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,3+0,1	7,7-7,9	0,35 (0,6)			
350	4,9-5,1	1,1-1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1340	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	350	1,2-1,5
ca. 62	9,3 4,0 1600	1360-1370 1450-1480 0 - 1,0					350 490-550=	4,9-5,1 2,0	550 1000 1340	3,0-3,3 5,8-6,2 8,6
						370-440 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 77,0-79,0 (75,0-81,0)	1360-1370 *	LDA 600	0,7 bar 61,0-64,0 (60,0-65,0)	100	150,0-170,0	-	-
			LDA 500	0 bar 53,0-55,0 (51,0-57,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.86

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

FOR 6,6 h - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2722 +RQV .. AB 1220 L	0,70	0 0,45 0,36	10,3-10,4 9,2-9,3 9,9-10,1 9,5-9,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DEE 7,6 e 1

2. Edition

En

PES 6 A 100 D 410 RS 3028 RSV 400-1100 A 2 B 2010 DL
Komb.-Nr. 0 401 276 047

supersedes 12.83
company John Deere
engine 6466 A
Traktor 4640

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05
(1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1100	11,1±0,1	11,1-11,3	0,3 (0,6)			
400	6,3-6,5	1,2-1,8	0,4 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	400	6,3	750	11,9
	X =						100	19,0-21,0	1100	11,1
							500	9,9		
ca. 43	1150	10,1					530-590	= 2,0		
2a	1200	4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	1,2 bar 111,0-113,0 (108,0-116,0)	1145-1155*	LDA 750	1,2 bar 119,5-122,5 (116,5-125,5)		100	175,0-195,0		
			LDA 500	0 bar 77,0-81,0 (74,0-84,0)		400	12,0-18,0		
						1200	27,0-33,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

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E4

E4

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 e 1

- 2 -

Test at n = **500** rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A..RS3028 + RSV..A2B2010DL	0,38	0,17	11,65 - 11,75 10,3 - 10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 e 2

1. Edition

En

PES 6 A 100 D 410 RS 3028
Komb.-Nr. 9 400 230 042

RSV 425-1100 A2B 2159 L

supersedes-

company John Deere

engine 6466 A

4650 Row Cropper

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 mm (from BDC)
(1,90-2,10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1100	11,1±0,1	11,3-11,5	0,3 (0,6)			
425	6,9-7,1	2,4-2,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	425	6,5	1000	11,1-11,2
	x =						100	min. 19,0	750	12,9-13,2
ca. 43	10,1	1145-1155					425	6,9-7,1		
2a	4,0	1190-1220					460-520	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 1100	0,8 bar 112,5-114,5 (111,0-116,0)	1145-1155*	LDA 750	0,8 bar 131,0-136,0 (129,0-138,0)	100	165,0-185,0			
			LDA 500	0 bar 86,0-90,0 (84,0-92,0)	400	24,0-28,0			
					190	35,0-45,0			

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 e 2

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution + difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 3028 + RSV..A2B 2159 L	0,10	0,30	11,1-11,2 13,0-13,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 f
2. Edition

En

PES 6 A 100 D 410 RS 3036

RSV 400-1100 A 2 B 2120 L

supersedes 2.84

company John Deere

Komb.-Nr. 9 400 230 032

engine 6 466 AT-05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,95-2,05$
(1,90-2,10) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1100	10,8+0,1	10,8-11,0	0,3			
400	6,6-6,8	1,3-1,7	0,3			

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 17	400	6,1	1100	10,8-10,9
							100	min. 19,0	650	11,8-12,1
							400	6,6		
ca. 40	9,8	1145-1155					480-540	= 2,0		
2a	4,0	1205-1235					850	max. 1,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	108,0-110,0 (105,0-113,0)	1145-1155*	650	115,5-118,5 (112,5-121,5)	100	170,0-195,0 = 21,0 mm RW	-	-	
					High	idle speed:			
					1200	27,0-37,0			
					Low	idle speed			
					400	13,0-17,0			

Checking values in brackets

* 1 mm less control rod travel than col 2

7.86

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Geschäftsereich KM Kundendienst Kitz-Ausrüstung
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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 c

En

1. Edition

Testoil-ISO 4113

PES 5 M 55 C 320 RS 158
RSF 340/2300 M 64-1
0 400 075 980
1- 2- 4 - 5 - 3
0-72-144-216-288

supersedes

company Daimler-Benz

engine OM 602 A
92 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting
testing, observe the
important instruc-
tions on the reverse.

A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30
(2,15-2,35)

mm (from BDC)

RW = 20,0-22,0 mm

Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1-5,2	0,25 (0,3)			
315	5,3-5,5	0,5-0,6	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
1	2	3	4	5	6	7	8	9
8-12	① min. 8,0	220	50	⑦ 13,9+0,1	1000		⑫ 100	min. 20,1
	② 5,3-5,5	315		⑧ 8,1-8,5	2500		⑬ 1600	13,2-13,4
	③ 4,2-4,4	380**		⑨ -			⑭ 2200	12,3-12,5
	④ -			⑩ 0-1,0	2950			
	⑤ 2,5	540-640		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 52,0	6,0 ⑫a
					315	5,0-6,0 (4,5-9,0)	1,0 (1,5) ⑮
			1000	51,0-52,0 (50,0-53,0)	2500	29,0-33,0 (28,0-34,0)	2,5 (3,0) ⑯

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

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1. Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar

18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at
n = 380 1/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop.
At n = 315 min⁻¹ and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

9. Checking the ELR servo magnet

- Control lever up against idle stop

At $n = 340$ 1/min, $I = 1.8$ A, control-rod travel = (12,4-13,8) mm, fuel delivery (41.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 52.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30° , $n = 1000$ 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting

At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until $U = 2.095-2.105$ is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MM 17,6 a

4. Edition

En

Testoil-ISO 4113
PE 12 P 100^A 520/5 RS 98

90

EP/RSUV 300-750 P5..320R

..300-1150 PO..324R,324DR

supersedes 7.77

company M W M

engine: D / TD 232 - 12

PE 12 P 100 A 500/5 RS 98

1 - 12 - 9 - 4 - 5 - 8 - 11 - 2 - 3 - 10 - 7 - 6 je 30°

Governor basic setting: control lever = 35°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery 10 Ø cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery 9 Ø cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	12	12,4 - 13,1	0,5	12	12,8 - 13,6	
	9	6,4 - 7,6		9	7,7 - 8,9	
	15	17,8 - 19,5		15	16,8 - 18,5	
200	9	4,6 - 5,8		9	5,7 - 6,9	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSUV .. P 5^A 320 R

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 61	750	16,0	without auxiliary spring			ca. 27	300	8,0	730	0
	770	11,4					100	19 - 21	400	0
	790	6,4					300	7,7-8,3		
⑤	770	10,4-12,3	with auxiliary spring				350	2,0-4,7	320	1,2-1,8
	800	4,0- 5,8					410	0 - 1		
	860	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
In accordance with nameplate of governor or pages 3 - 9							300	8,0	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSUV .. P 0 / A 324 R

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1150	16,0	without auxiliary spring			ca. 24	300	8,0	1100	0
	1200	9,8					80	19 - 21		
	1220	7,1					300	7,7-8,3		
⑤	1200	8,3-10,8	with auxiliary spring				380	2,8-5,2	500	1,2-1,8
	1250	2,8-5,5					500	0 - 1		
	1350	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
In accordance with	nameplate of		governor or pages 3 - 9				300	8,0
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

EP/RSUV .. P 0 / A 324 DR

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1150	16,0	without auxiliary spring			ca. 24	300	8,0		Adjust until quantity is reached
	1200	9,8					80	19 - 21		
	1220	7,1					300	7,7-8,3		
⑤	1200	8,3-10,8	with auxiliary spring				380	2,8-5,2		
	1250	2,8-5,5					500	0 - 1		
	1350	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
In accordance with	nameplate of		governor or pages 3 - 9				300	8,0

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 330 PS / 2500 min⁻¹
1250 92,0 - 94,0 1270

Testoil-ISO 4113

B'324 PS / 2500 min⁻¹
1250 92,0 - 94,0 1270

B 324 PS / 2500 min⁻¹
1250 92,0 - 94,0 1270

F 320 PS / 2300 min⁻¹
1150 90,0 - 92,0 1170

B'310 PS / 2300 min⁻¹
1150 90,0 - 92,0 1170

B 310 PS / 2300 min⁻¹
1150 90,0 - 92,0 1170

A 282 PS / 2300 min⁻¹
1185 84,0 - 86,0 1200

B'288 PS / 2100 min⁻¹
1050 85,0 - 87,0 1060

B 288 PS / 2100 min⁻¹
1050 85,0 - 87,0 1060

A 262 PS / 2100 min⁻¹
1080 80,0 - 82,0 1090

F 288 PS / 2000 min⁻¹
1000 84,0 - 86,0 1010

B'276 PS / 2000 min⁻¹
1000 84,0 - 86,0 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 276 PS / 2000 min⁻¹
1000 84,0 - 86,0 1010

Testoil-ISO 4113

A 252 PS / 2000 min⁻¹
1030 79,0 - 81,0 1040

B 254 PS / 1800 min⁻¹
900 83,0 - 85,0 910

A'230 PS / 1800 min⁻¹
900 83,0 - 85,0 910

A 230 PS / 1800 min⁻¹
930 78,0 - 80,0 940

B 216 PS / 1500 min⁻¹
750 83,0 - 85,0 760

A'196 PS / 1500 min⁻¹
750 83,0 - 85,0 760

A 196 PS / 1500 min⁻¹
775 78,0 - 80,0 785

B'315 PS / 2300 min⁻¹
1150 90,0 - 92,0 1170
Special output

D 286 PS / 1800 min⁻¹
900 97,0 - 99,0 910
Emergency power output

C 260 PS / 1800 min⁻¹
900 97,0 - 99,0 910
Emergency power output

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 240 PS / 1500 min⁻¹

750 96,0 - 98,0 760

Emergency power output

Testoil-ISO 4113C 218 PS / 1500 min⁻¹

750 96,0 - 98,0 760

Emergency power output

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 420 PS / 2300 min⁻¹
1150 115,0 - 117,0 1170

Testoil-ISO 4113

B'414 PS / 2300 min⁻¹
1150 115,0 - 117,0 1170

B 414 PS / 2300 min⁻¹
1150 115,0 - 117,0 1170

A 376 PS / 2300 min⁻¹
1185 110,0 - 112,0 1200

B'384 PS / 2100 min⁻¹
1050 110,0 - 112,0 1060

B 384 PS / 2100 min⁻¹
1050 110,0 - 112,0 1060

A 348 PS / 2100 min⁻¹
1080 105,0 - 107,0 1090

F 384 PS / 2000 min⁻¹
1000 107,0 - 109,0 1010

B'368 PS / 2000 min⁻¹
1000 107,0 - 109,0 1010

B 368 PS / 2000 min⁻¹
1000 107,0 - 109,0 1010

A 334 PS / 2000 min⁻¹
1030 102,0 - 104,0 1040

B 336 PS / 1800 min⁻¹
900 106,0 - 108,0 910

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

①

A'306 PS / 1800 min⁻¹
 900 105,0 - 107,0 910

Testoil-ISO 4113

A 306 PS / 1800 min⁻¹
 930 100,0 - 102,0 940

B 284 PS / 1500 min⁻¹
 750 107,0 - 109,0 760

A'258 PS / 1500 min⁻¹
 750 107,0 - 109,0 760

A 258 PS / 1500 min⁻¹
 775 102,0 - 104,0 785

D 375 PS / 1800 min⁻¹
 900 121,0 - 123,0 910
 Emergency power output

C 340 PS / 1800 min⁻¹
 900 121,0 - 123,0 910
 Emergency power output

D 315 PS / 1500 min⁻¹
 750 121,0 - 123,0 760
 Emergency power output

C 286 PS / 1500 min⁻¹
 750 121,0 - 123,0 760
 Emergency power output

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 417 PS / 1800 min⁻¹
 900 137,0 - 139,0 910

Testoil-ISO 4113

A'378 PS / 1800 min⁻¹
 900 137,0 - 139,0 910

A 378 PS / 1800 min⁻¹
 930 128,0 - 130,0 940

B 354 PS / 1500 min⁻¹
 750 133,0 - 135,0 760

A'321 PS / 1500 min⁻¹
 750 133,0 - 135,0 760

A 321 PS / 1500 min⁻¹
 780 125,0 - 127,0 790

D 385 PS / 1500 min⁻¹
 750 146,0 - 148,0 760
Emergency power output

C 350 PS / 1500 min⁻¹
 750 146,0 - 148,0 760
Emergency power output

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 398 PS / 1800 min⁻¹
 900 137,0 - 139,0 910

Testoil-ISO 4113

A'359 PS / 1800 min⁻¹
 900 137,0 - 139,0 910

A 359 PS / 1800 min⁻¹
 930 130,0 - 132,0 940

B 339 PS / 1500 min⁻¹
 750 135,0 - 137,0 760

A'306 PS / 1500 min⁻¹
 750 135,0 - 137,0 760

A 306 PS / 1500 min⁻¹
 780 128,0 - 130,0 790

D 355 PS / 1500 min⁻¹
 750 142,0 - 144,0 760
 Emergency power output

C 320 PS / 1500 min⁻¹
 750 142,0 - 144,0 760
 Emergency power output

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 IHC 9,4 a 1

1. Edition

En

PES 8 P 100 A 921/5 RS 286
Komb.-Nr. 0 402 0 8 036

RQV 325-1250 PA 274 KR

supersedes -

company IHC

engine DVT 573 B

1-8-4-2-7-3-6-5

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 9 681 230 713

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,7-2,8}
(2,65-2,85) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	9,6-9,7	10,9-11,1	0,4			
325	ca. 5,0	1,7-2,3	0,6			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1320 1400 1520 1640	15,0-18,0 9,6-13,9 0-7,4 0	-	-	-	ca. 10	100 220 340 400 550 670	7,1-8,0 5,7-8,0 2,8-5,0 2,2-3,8 0-1,1 0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1250	0,8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100 325	min. 17,0-23,0	1250 900 700	9,6-9,7 10,1+0,2 9,8+0,2
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

/ .80

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D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4 a 1

- 2 -

Test at n = 800 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 8 P ... RS 286 +RQV ... PA 274 KR	0,1-0,16	0,80-0,87	Start of timing advance End of timing advance

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 DEE 7,6 a 1

3. Edition

En

PES 6 P 110 A 720 RS 361 US-RSV 400-1100 P 2/497
Komb.-Nr. 9 400 231 108
Use overflow valve 1 457 413 010

supersedes 7.84
company John Deere
engine 6466 A
161 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85
(2,70-2,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1100	11,3+0,1	15,0-15,3	0,4(0,75)			
400	5,5-5,7	0,8-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	400	5,2	1100	11,0-11,1
							100	min.19,0	950	11,0-11,2
							400	5,6-5,8	700	11,5-11,7
							510-670	= 2,0		
ca.48	10,3	1140-1150								
	4,0	1240-1270								
2a	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1100	0,9 bar 149,5-152,5 (147,0-155,0)	1140-1150*	LDA 950	0,9 bar 151,0-155,0 (148,0-158,0)	100	160,0-180,0 (156,0-184,0)	0 400	5,6	
			LDA 500	0 bar 119,5-123,5 (116,5-126,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.86

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..RS361 + US-RSV..P2/497	0,38	0,24 0	11,25-11,35 10,40-10,80 10,20-10,40

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 g

1. Edition

En

PES 6 P 100 A 720 LS 502

RQV 350-1100 PA798-1

Komb.-Nr. 9 400 087 344

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes

company Caterpillar

engine 3306 DIT

138 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,95-4,05$ mm (from BDC)
 $(3,90-4,10)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,6-9,7	10,4-10,5	0,35(0,6)			
350	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 8,0	350	1,3-1,5
ca. 64	8,6 4,0 1320	1130-1140 1185-1215 0-1,0					350 500-560 = 2,0	4,9-6,1	500	2,9-3,2
						370-440			700	4,5-4,8
						③a			900	6,0-6,2
									1150	8,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	103,5-104,5 (101,0-107,0)	1130-1140*	500	105,5-109,5 (103,5-111,5)	100 350	157,0-177,0 (153,0-181,0) 4,9-5,1 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 w 4

En

1. Edition

PES 6 P 120 A 720 LS 388

RQ 300/1100 PA 658-12

Komb.-Nr. 0 402 046 317

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-

company MAN

engine D 2566 MLUM/US

MAN-Nr. 2-7699

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	10,1+0,1	14,5-14,7	0,5(0,9)			
300	5,8-6,0	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	8,4	1145-1160	300	5,9	100	min.7,4	750	10,2-10,3
VH =	ca. 46°			4,0	1175-1205			300	5,8-6,0	1100	9,4-9,5
				1350	0-1,0			360-400	= 2,0	810	9,9-10,1
										915	9,5-9,8

Torque-control travel
on flyweight assembly dimension a =

0,30

mm

Speed regulation: At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA	1,0 bar	-		LDA	0,35 bar	100	225,0-245,0
750	145,0-147,0			500	129,0-141,0		(221,0-249,0)
	(142,0-150,0)				(126,0-144,0)		
1100	153,0-157,0			LDA	0 bar		
	(150,0-160,0)			500	111,0-113,0		
650	138,0-144,0				(108,0-116,0)		
	(135,0-147,0)						

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 w 4

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 P..LS 388 + RQ..PA 658-12	1,0	0 0,25 0,32	10,1-10,2 9,2-9,3 9,4-9,5 9,7-10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 o 14
1. Edition

En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5A 509
Komb.-Nr. 0 401 876 302

supersedes
company DAF
engine DHT 825
162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35 (0,6)			
250	5,2-5,4	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 X = 5,0	-	-	-	ca. 24	250	4,8	1000	11,6-11,7
ca. 58	10,4	1240-1250					250	5,2-5,4	400	11,6-11,8
							560-620	= 2,0	300	11,9-12,4
2a	4,0	1325-1355								
	1530	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA	0,7 bar	1240-1250*	LDA	0 bar	100	210,0-230,0	0 -	-	-
1000	118,5-120,5 (116,5-122,5)		600	92,5-96,5 (90,0-99,0)	250	(206,0-234,0)	8,0-12,0 (5,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

9.86

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F4

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,30 14

-2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 447 +RSV..P5A 509	0,70	0 0,32 0,23	11,4-11,5 10,4-10,5 11,1-11,2 10,2-10,7

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,9 a 14

1. Edition

En

PES 6 P 120 A 720/3 LS 470-2 RQ 300/1100 PA 658-21

Komb.-Nr. 0 402 036 055

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company MAN

 engine: D 2866 LUH
 243 kW/2200 min⁻¹
 MAN-Nr. 2-7711

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,3+0,1	20,5-20,7	0,5 (0,9)			
300	4,9-5,1	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,1 4,0 1300	1145-1160 1185-1215 0 - 1,0	300	5,0	100 300 350-390 = 2,0	min. 6,5 4,9-5,1 2,0	750 1100 925	11,6-11,7 11,1-11,2 11,3-11,4
VH = max. 46°											

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 750	1,0 bar 205,0-207,0 (202,0-210,0)	-	LDA 500	0,44 bar 182,0-190,0 (179,0-193,0)	100	225,0-245,0 (221,0-249,0)
1100	213,0-217,0 (210,0-220,0)		LDA 500	0 bar 130,0-132,0 (127,0-135,0)		

Checking values in brackets

4.86

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MAN 11,9 a 14 - 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6P..LS 470-2 +RQ..PA 658-21	1,0	0 0,23 0,44	11,3-11,4 9,0-9,1 9,3-9,4 10,6-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 10,0 e

2. Edition

En

PE 5 P 110 A 720 RS 479 RQ 300/1050 PA 718-1
Komb.-Nr. 9 400 087 308

supersedes 10.85
company: Daimler-Benz
engine: OM 355-5 A
170,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,35-3,45$ mm (from BDC) Cyl.1; RW = 9,0-12,0 mm
(3,30-3,50)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,2+0,1	16,1 - 16,3	0,4 (0,75)			
300	6,4-6,6	1,1 - 1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,2	1095-1110	300	6,5	100	min. 8,5	1050	12,2-12,3
VH = 49°				4,0	1160-1180			300	6,4- 6,6	600	13,1-13,2
				1300	0-1,0			380-	420= 2,0	900	12,8-13,0

Torque-control travel on flyweight assembly dimension a = 0,35 mm Speed regulation: At 1095 - 1110 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	Control rod travel
LDA 1050	0,7 bar 161,0 - 163,0 (158,0 - 166,0)	-		LDA 600 0,7 bar 177,0 - 181,0 (174,0 - 184,0)		100	150,0 - 170,0
				LDA 00 0,7 bar 174,0 - 178,0 (171,0 - 181,0)			
				LDA 500 0 bar 112,5 - 115,5 (110,0 - 118,0)			

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 10,0 e

- 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 5 P..RS 479 + RQ..PA 718-1	0,70	0 0,40 0,25	13,1 - 13,2 10,3 - 10,4 12,4 - 12,5 11,1 - 11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 110 A 320 RS 494 RQV 300-1100 PA 435-1
Komb.-Nr. 0 401 846 515

supersedes-

company: Volvo

engine: TD 71 G

147 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,5+0,1	9,8-10,0	0,4(0,8)			
300	4,6-4,8	1,2- 1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 11	100 min.6,1	250	250	1,0-1,2
ca. 64	9,5	1140-1150					300 4,6-4,8	530	530	3,3-3,5
	4,0	1210-1240						820	820	5,0-5,2
	1300	0- 1,0				350-510		1100	1100	7,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0 bar	100	150,0-190,0	-	-
700	98,0-100,0 (95,0-103,0)		700	78,0-81,0 (75,0-84,0)	300	12,0- 16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.86

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D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. RS 494 + RQV..PA 435-1	0,70	0 0,34 0,23	10,5-10,6 9,5- 9,6 10,3-10,4 9,6- 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,1 b2

1. Edition

En

PE 6 P 110 A 320 RS 494 RQV 300-1100 PA 435-2
Komb.-Nr. 0 401 846 516

supersedes-

company: Volvo

engine: TD 71 G
136 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,2+0,1	9,2-9,4	0,4(0,8)			
300	4,6-4,8	1,2-1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 11	100 min. 6,1	250	250	1,0-1,2
ca. 64	9,2	1140-1150					300 4,6-4,8	530	530	3,3-3,5
	4,0	1200-1230						820	820	5,0-5,2
	1300	0- 1,0				350-510		1100	1100	7,6
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,7 bar 92,0-94,0 (89,0-97,0)	1140-1150*	LDA 700	0 bar 78,0-81,0 (75,0-84,0)	100 300	150,0-190,0 12,0- 16,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.86

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D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P..RS 494 +RQV..PA 435-1	0,70	0 0,29 0,23	10,2-10,3 9,5- 9,6 10,0-10,1 9,6- 9,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,1 b

1. Edition

En

PE 6 P 110 A 320 RS 494 RQV 300-1200 PA 435-3
Komb.-Nr. 0 401 846 517

supersedes-

company: Volvo

engine: TD 71 GA
157 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
(2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,9+0,1	10,7-10,9	0,4(0,8)			
300	4,6-4,8	1,2- 1,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 11	100 min.6,1			
ca. 66	9,9	1240-1250					300 4,6-4,8			
	4,0	1320-1350								
	1400	0- 1,0				350-510				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed rev/min ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,0 bar 107,0-109,0 (104,0-112,0)	1240-1250*	LDA 1000	1,0 bar 109,5-112,5 (106,0-116,0)	100	150,0-190,0	-	-
			LDA 700	0 bar 89,0-91,0 (86,0-94,0)	300	12,0- 16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.86

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel • diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. RS 494 + RQV..PA 435-3	1,0	0 0,38 0,29	10,9-11,0 10,0-10,1 10,7-10,8 10,2-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 110 A 320 RS 494-1 RQV 300-1200 PA 435-4
Komb.-Nr. 0 401 846 524

supersedes -
company: Volvo
engine: TD 71 K
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	12,1-12,3	0,4(0,75)			
300	4,8-5,0	1,7- 2,1	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max. ca. 66	1200 10,9 4,0 1400	15,2-17,8 1240-1250 1320-1350 0- 1,0	-	-	-	ca. 11 350-510 ③a	100 300	min.6,3 4,8-5,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,0 bar 121,0-123,0 (118,0-126,0)	1240-1250*	LDA 1000	1,0 bar 120,5-123,5 117,0-127,0	100 300	165,0-185,0 17,0- 21,0	-	-
			LDA 700	0 bar 79,0-81,0 (76,0-84,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

VOL 7,1 b3

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution * difference mm (1)
PE 6 P..RS 494-1 +RQV..PA 435-4	1,0	0 0,60 0,28	11,9-12,0 9,6- 9,7 11,7-11,8 9,8-10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 100 A 720 LS 502

RQV 350-950 PA 798-2

Komb.-Nr. 9 400 087 345

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes

company: Caterpillar

engine: 3306 DIT

114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$ mm (from BDC) $RW = 9,0-12,0$ mm
(3,90-4,10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	8,7-8,8	8,8-8,9	0,35(0,6)			
350	6,4-6,6	1,3-1,7	0,35			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1055	15,2-17,8	-	-	-	ca. 15	100	min. 8,5	300	1,1-1,4
ca. 65	7,7	980-990					350	4,9-5,1	500	3,4-3,7
	4,0	1025-1055					480-540 = 2,0		700	5,2-5,5
	1180	0-1,0							900	6,8-7,0
									1055	8,6

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
950	88,0-89,0 (85,5-91,5)	980-990*	500	100,0-104,0 (98,0-106,0)	100	157,0-177,0 (153,0-181,0)	950	8,7-8,8
			800	91,0-95,0 (89,0-97,0)			500	9,4-9,5
							800	9,1-9,3
							850	8,9-9,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications

Fuel Injection Pumps ① and Governors

PES 4 P 100 A 720 LS 504

RQV 350-1100 PA 798-3

Komb.-Nr. 9 400 087 340

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes-

company: Caterpillar

engine: 3304 DINA

78 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,95-4,05$
 $(3,90-4,10)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,7-9,8	8,6-8,7	0,35(0,6)			
350	6,8-7,0	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 14	100	min.9,5	350	1,3-1,7
ca. 67	8,7	1130-1140					350	5,1-5,3	450	3,2-3,5
	4,0	1190-1220					460-520 = 2,0		600	4,4-4,7
	1320	0-1,0				320-390			1000	7,0-7,2
						③a			1150	8,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	86,0-87,0 (83,5-89,5)	1130-1140*	700	82,0-86,0 (80,0-88,0)	100	165,0-185,0 (161,0-189,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 7,0 d 1

1. Edition

En

PES 4 P 100 A 720 LS 504

RQV 350-950 PA 798-4

Komb.-Nr. 9 400 087 342

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes -

company: Caterpillar

engine: 3304 DINA

66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$ mm (from BDC); RW = $9,0-12,0$ mm
($3,90-4,10$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	8,9-9,0	7,9-8,0	0,35(0,6)			
350	6,8-7,0	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 14	100	min.8,5	350	1,3-1,7
ca. 64	7,9 4,0 1150	980-990 1025-1055 0-1,0				320-390	350 490-550 = 2,0	5,1-5,3	500 700 900 1050	3,3-3,6 5,1-5,4 6,8-7,0 8,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery Idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
950	79,0-80,0 (76,5-82,5)	980-990*	500	65,5-69,5 (63,5-71,5) 73,5-77,5 (71,5-79,5)	100	165,0-185,0 (161,0-189,0) 5,1-5,3 mm RW	950	8,9-9,0
			700		350		500	9,4-9,5
							700	9,2-9,4
							800	8,9-9,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 7,0 d

1. Edition

En

PES 4 P 100 A 720 LS 504

RQV 350-1000 PA 798-5

Komb.-Nr. 9 400 087 343

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 008

supersedes

company Caterpillar

engine: 3304 DINA

66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$
($3,90-4,10$) mm (from BDC); RW = $9,0-12,0$ mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	8,7-8,8	7,4-7,5	0,35(0,6)			
350	6,8-7,0	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 14	100	min. 8,5	350	1,3-1,7
ca. 65	7,7	1030-1040					350	5,1-5,3	500	3,3-3,6
	4,0	1070-1100					490-550=2,0		700	5,1-5,4
	1200	0-1,0				320-390			900	6,8-7,0
						③a			1050	8,6

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	74,0-75,0 (71,5-77,5)	1030-1040*	500	60,5-64,5 (58,5-66,5)	100	165,0-185,0 (161,0-189,0)	1000	8,7-8,8
			800	72,0-76,0 (70,0-78,0)	350	5,1-5,3 mm RW	500	9,1-9,2
							800	8,9-9,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.66

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 13,4 e

2. Edition

En

PES 6 P 110 A 420 LS 3037

EP/RSV 350-1050 P2/425 DR

supersedes 5.83

company IHC

DTI-817 C

Values only apply to test nozzle-and-holder assembly

1 688 901 018 and fuel-injection test tubing 9 681 230 724

engine Romb.-Nr. 0 402 076 710

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Suction-gallery pressure 2,8 bar

Port closing at prestroke $2,0 - 2,1$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,3+0,1	19,9-20,1	0,4			
350	4,6-4,7	2,0-2,5				
** With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it makes contact and screw out by one turn.						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21		**	1050	11,3-11,4
ca. 45	10,3	1090-1100					100	20,0-21,0	700	12,1-12,3
	4,0	1145-1175					200	11,0-21,0	550	12,1-12,3
	1300	0,3 - 1,7					350	4,6		
	2a						390-420	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	0,8 bar 199,0-201,0 (197,0-203,0)	1090-1100*	LDA 750	0,8 bar 202,0-208,0 (199,0-211,0)		100	180,0-205,0	-	-
			LDA 800	0 bar 145,0-153,0 (142,0-156,0)		350	20,0-25,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.86

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D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 e

- 2 -

Test at n =

800

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P...LS3037 EP/RSV...P2/425DR	0,19 - 0,25	0,49 - 0,52	Saugregelweg + 0,5 mm 10,8 - 10,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 47,5 h

1. Edition

En.

PE 12 ZWM 160/120 RS 2012

Komb.-Nr. 0 406 030 004

12- 9- 4- 5- 8- 11- 2- 3- 10- 7- 6- 1

0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Replaces -

Firm MTU

Engine 12 V 396-03

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

 Port closing at prestroke ^{2,5-2,6}
 (2,45-2,65) mm (from BDC) Cyl. 12

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	630,0-644,0	20 (30)	625,0-649,0	-
1000	9,0	212,0-240,0	28 (42)	207,0-245,0	
350	9,0	132,0-156,0	16 (24)	127,0-161,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	mm min ⁻¹ 10	Control-rod travel mm min ⁻¹ 11
-	-	-	-	-	-	-	-	-	-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3		min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Adjust according to		the engine records.		-	-	-	-

Checking values in brackets

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 13,4 d **40**

2. Edition

En

PES 6 P 110 A 420 LS 3043

RSV 350-1100 PO/431 DR

supersedes 3.83

company IHC

engine DTI 817 C

309 kW (420 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1}
(1,95-2,15) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1100	15,4+0,1	25,8-26,0	0,8			
300	5,6-5,8	0,7-1,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 20	350	5,5	1080	0
ca. 44	1100	15,6-16,2					100	20,0-21,0	750	0,9-1,1
	1200	6,0-9,2					350	5,4-5,6	500	0,9-1,1
	1280	1,3-2,0					410	1,3-2,0		
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1100	1,2 bar 257,5-259,5 (254,5-262,5)			LDA 700	1,2 bar 284,5-288,5 (281,5-291,5)	100	255,0-295,0		
				LDA 500	0 bar 151,5-155,5 (148,5-158,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.86

G1

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D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 d - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = har	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. LS 3043 + RSV..PO/431 DR	0,09-0,17	0,80-0,93	Beginn Ende

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 10,1 b

3. Edition

En

US-PES 6P 110 A 720 RS 3086 US-RSV 400-1050 PO/492-1

Komb.-Nr. 9 400 231 174

Values apply to fuel-injection test tubing 9 681 230 705

superseded 11.85

company John Deere

engine 6619 A

215 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,45-3,55

Port closing at prestroke (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1050	13,9+0,1	21,4-21,6	0,4 (0,75)			
400	6,0-6,2	1,9-2,5	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,6	1050	13,9-14,0
	X =						400	6,0-6,2	700	14,3-14,6
ca. 42	12,9	1090-1100					540-600	= 2,0		
2a	4,0	1185-1215								
	1280	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)								
rev/min 1	cm ³ /1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	1,0 bar 213,5-215,5 (210,5-218,5)	1090-1100*	LDA 700	1,0 bar 223,5-226,5 (220,0-230,0)	100	135,0-155,0	400	6,1
			LDA 500	0 bar 136,5-139,5 (133,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.86

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G3

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DEE 10,1 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution , difference mm (1)
US-PES6P..RS 3086 +RSV.. P0/492-1	0,48 bar	0,26 bar	14,1 - 14,2 12,9 - 13,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,6 n

2. Edition

En

PES 6 P 110 A 720 RS 3104

RQ 900 PA 738

Komb.-Nr. 0 402 046 759

supersedes 9.84

company KHD

engine

BF 6 L 413 FR
161 kW/1800 min⁻¹
Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC) $(2,75-2,95)$ RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,6+0,1	14,7-14,9	0,4(0,75)			
300	6,7-6,9	1,3-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications Control rod travel mm 5		Control rod travel mm 8		Test specifications Control rod travel mm 10		Control rod travel mm 12	
-	-	-	-	11,6 5,5 1050	900-905 936-945 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
850	147,0-149,0 (144,0-152,0)	-	-	-	-	-	-

Checking values in brackets

7.86

Test oil ISO 4113

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G5

G5

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 15,8 n

2. Edition

En

PE 10 P 110 A 920/5 LS 3138
Komb.-Nr. 0 401 849 712

RQ 300/1150 PA 535-1

supersedes 7.85

company: KHD

engine: BF 10 L 413 FZT
265 kW/2300 min⁻¹

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8-2,9
(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,0±0,1	9,7-10,0	0,4(0,75)			
300	8,6-8,8	1,1-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,9	600	20,0	10,3	1195-1210	300	7,0	100	min. 8,4	1150	11,3-11,4
VH = max. 46°				4,0	1235-1265			300	6,9-7,1	800	12,0-12,1
				1350	0-1,0			370-430	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7
LDA 800	0,9 bar 143,5-146,5 (141,0-149,0)	-	-	-	-	-	-

Checking values in brackets

7.86

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G6

G6

D. Adjustment Test for Manifold Pressure Compensator

KHD 15,8 n

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel: mm (1) diminution difference
PE 10 P..LS 3138 + RQ..PA 535-1	0,90	0 0,50 0,35	12,0-12,1 10,0-10,1 11,5-11,6 10,2-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (- maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 b

3. Edition

En

PES 6 P 110 A 720 RS 3145

RQV 350-1300 PA 748

supersedes 1.86

Komb.-Nr. 9 400 087 305

company Ford

Values only apply to test nozzle-and-holder assembly

engine 6,6 l TC

1 688 901 017 and fuel-injection test tubing 1 680 750 008

123 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,25-4,35 mm (from BDC) Port closing difference between control-rod travel 10,5 mm and max. 3,5-4° camshaft

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	11,6+0,1	9,4-9,7	0,4(0,75)			
350	6,9-7,1	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1350	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	350	0,6-1,3
ca. 64	10,6	1360-1370					350	6,9-7,1	500	2,3-2,7
	4,0	1470-1500					580-640=2,0		800	4,0-4,3
	1600	0-1,0				370-440			1000	5,0-5,3
						③a			1300	7,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	93,5-96,5 (91,0-99,0)	1360-1370*	600	87,5-91,5 (84,5-94,5)	100	105,0-125,0 (101,0-129,0) = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 7,8 a 2

2. Edition

En

PES 6 P 110 A 720 RS 3150

RQV 350-1300 PA 776-2

Komb.-Nr. 9 400 087 336

Values only apply to test nozzle-and-holder assembly

1 688 901 017 and fuel-injection test tubing 1 680 750 015

supersedes 4.86

company: Ford

engine: 7,8 l - TC

210 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,25-4,35

(4,20-4,40)

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	12,3+0,1	12,6-12,8	0,5 (0,9)			
350	7,6-7,8	2,3-2,7	0,35(0,55)			

Port closing difference between control-rod travel 12 mm and max. 2,0-3,0° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8	-	-	-	ca. 16	100	min. 9,5	350	0,6-1,3
ca. 62	11,3	1360-1370					350	7,6-7,8	500	2,3-2,7
	4,0	1470-1500					590-650 = 2,0		800	4,0-4,3
	1620	0-1,0				370-440			1000	5,0-5,3
						③a			1700	7,3

Torque control travel a = 0,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
LDA 1300	0,55 bar 126,0-128,0 (124,0-130,0)	1360-1370*	LDA 1000	0,55 bar 118,0-122,0 (116,0-124,0)	100	148,0-168,0 (144,0-172,0)	1300	12,3+0,1	1
LDA 600	0,55 bar 90,5-94,5 (88,5-96,5)		LDA 500	0 bar 77,0-79,0 (74,0-82,0)	350	23,0-27,0 (20,5-29,5)	600	12,6+0,1	2
							1050	12,5+0,1	3
							1000	12,5+0,1	4

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.85

Testoil-ISO 4113

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G9

D. Adjustment Test for Manifold Pressure Compensator

FOR 7,8 a 2

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution + difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 3150 + RQV..PA 776-2	0,55	0 0,42 0,37	12,6-12,7 12,3-12,4 12,4-12,5 12,3-12,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 7,8 b1

1. Edition

En

PES 6 P 110 A 720 RS 3151
Komb.-Nr. 9 400 087 367

RQV 350-1200 PA 777-1

supersedes

company Ford

engine 7,8 TC

165,4 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{4,25-4,35}
(4,20-4,40) mm (from BDC) Cyl.1; RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	14,1+0,1	14,2-14,4	0,5 (0,9)			
350	7,4-7,6	1,6-2,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min. 9,0	350	0,6-1,3
ca. 65	13,1	1260-1270					350	7,4-7,6	500	2,3-2,7
	4,0	1425-1455					620-680 = 2,0		800	4,0-4,3
	1600	0 - 1,0				370-440			1000	5,0-5,3
						③a			1300	7,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery Idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control ⑤ travel rev/min Control rod travel mm 9	
1	2	3	4	5	6	7	8	9
LDA 1200	0,8 bar 141,5-143,5 (139,5-145,5)	1260-1270*	LDA 600	0,8 bar 108,0-112,0 (106,0-114,0)	100	150,0-170,0 (146,0-174,0) = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 73,0-75,0 (70,0-78,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

FOR 7,8 b1

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES 6 P..RS 3151 + RQV..PA 777-1	0,80	0 0,58 0,39	13,8-13,9 12,1-12,2 13,7-13,8 12,6-12,8	

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 KHD 16,0 d

1. Edition

En

PE 10 P 110 A 920/5 LS 3164 RQV 300-1050 PA 790

Komb.-Nr. 0 401 849 722

1-10- 9- 4- 3- 6- 5- 8- 7- 2

0-27-72-99-144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes -

company: KHD

engine: BF 10 L 513
247 kW/2100 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5+0,1	12,0-12,2	0,4(0,75)			
300	6,4-6,6	1,2- 1,8	0,45(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 18	100	min. 7,9	300	1,2-1,4
ca. 55	10,5 4,0 1300	1090-1100 1150-1180 0- 1,0				340-460	300	6,4-6,6	800	5,4-5,6
									1050	8,2

Torque control travel a = 0,30 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	120,0-122,0 (117,0-125,0)	1090-1100*	-	-	100	135,0-165,0	650 1050 885 760	11,8+0,1 11,5+0,1 11,5+0,2 11,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 120 A 320 LS 3807-10 RQ 300/1150 PA 546-6

Komb.-Nr. 0 401 848 770

0 401 848 769

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

1-8-7-2-6-3-5-4 je 45 ° ± 0,5 (± 0,75 °)

supersedes 10.85

company: Daimler-Benz

engine: OM 422 A

243,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDC)

Cyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,3-15,5	0,5 (0,9)			
300	5,0-5,2	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,5 4,0 1350	1200-1215 1250-1280 0 - 1,5	300	5,1	100 300 350-390 = 2,0	min. 6,0 5,0-5,2	1150 750	10,5-10,6 10,8-11,0
VH = max. 46 °											

Torque-control travel
on flyweight assembly dimension a =

0,2

mm

Speed regulation: At 1200-1215 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1150	0,7 bar 153,0-155,0 (151,0-158,0)			LDA 750	0,7 bar 168,5-170,5 (165,5-173,5)	100	140,0-160,0 (136,0-164,0)
				LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 q 4 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 8P..LS 3807-10 +RQ..PA 546-6	0	0,40 0,47	10,3-10,5 10,4-10,5 11,0-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b 4

-1. Edition
En

PE 12 P 120 A 320 LS 3819-14 RQV 350-1150 PA 493-6
1- 5- 9- 8- 3 - 4 -11 -10 - 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Daimler-Benz
OM 424 LA
engine: 452 kW
Komb.-Nr.
0 401 840 732

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) Cyl.12; RW = 9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	18,0-18,2	0,5(0,9)			
350	4,8-5,0	1,6-2,2	0,8(1,2)			
650	-					
500	Sect. C, Col. 4-5		0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 12	100	min. 6,2	350	2,2-2,3
ca. 65	11,1 4,0 1350	1190-1200 1235-1265 0 - 1,0				400-600	350	4,5-4,7	510 1150 1200	3,2-3,5 7,5-8,3 9,0

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200*	LDA 650	0,7 bar 179,0-185,0 (176,0-188,0)	100	160,0-180,0 (156,0-184,0)	-	-
1150	134,0-138,0 (131,0-141,0) **		LDA 500	0 bar 131,0-133,0 (128,0-136,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set lower delivery at inner lever!

4.86

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b 4 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE12P..LS 3819-14 +RQV..PA 493-6	0,70	0 0,54 0,47	12,1-12,2 10,1-10,3 11,4-11,5 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP C01/4 MB 21,9 e 3

1. Edition

En

PE 12 P 110 A 320 LS 3820-12 RQV 350-1150 PA 378-4

Komb.-Nr. 0 401 840 731

1-5 - 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315 °

± 0,5 ° (± 0,75 °)

supersedes -

company: Daimler-Benz

engine: OM 424

309 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,0-4,1 \\ (3,95-4,15) \end{matrix}$ mm (from BDC) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	12,2-12,4	0,4 (0,8)			
350	7,7-7,9	1,4-2,0	0,4 (0,7)			
650	- Sect. C, Col. 4-5		0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 20	100	min. 9,0	300	1,7-1,9
ca. 64	10,4 4,0 1300	1170-1180 1235-1265 0 - 1,0					350 375-485	7,4-7,6	580 870 1150	3,6-3,9 5,2-5,6 7,8

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1170-1180*	600	96,0-100,0 (93,0-103,0)	100	130,0-140,0 (126,0-144,0)	-	-
1150	90,0-94,0 (87,0-97,0) **							

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set lower delivery at inner lever!

4.86

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 20,9 u

2. Edition

En

PE 12 P 120 A 520/4 LS 3828

RQ 1200 PA 660-1

supersedes 9.85

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

company: MAN

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

engine: D 2842 LE

559 kW/2300 min⁻¹

Values only apply to test nozzle-and-holder assembly

Komb.-Nr. 0 401 840 728

1 688 901 019 and fuel-injection test tubing 1 680 750 067

MAN-Nr. 2-7686

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{4,2-4,3}
(4,15-4,35)

mm (from BDC)

Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Setting point		Test specifications		Control rod	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	10,9 4,0 1400	1195-1210 1285-1315 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = - mmSpeed regulation: At 1245-1250 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
Setting point		Test specifications		Test specifications		Control rod	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
1150	200,0-202,0 (197,0-205,0)	-	-	-	-	-	-

Checking values in brackets

6.86

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G19

519

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 t

2. Edition

En

PE 12 P 120 A 520/4 LS 3828 RQV 250-1150 PA 668-7

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.85

company MAN

D 2842 LE

engine 560 kW

Komb.-Nr. 0 401 840 725

MAN-Nr. 2-7590

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,2 - 4,3
(4,15-4,35)

mm (from BDC)

Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.8,5	350	2,0-2,5
ca. 66	10,9	1190-1200					250	6,9-7,1	900	6,7-6,9
	4,0	1320-1350					400-460=2,0		1150	8,6
	1450	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	200,0-202,0 (197,0-205,0)	1190-1200*	-	-	100	190,0-210,0 (186,0-214,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.00

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Test Specifications Fuel Injection Pumps ② and Governors

PE 12 P 120 A 520/4 LS 3828 RQ 250/1150 PA 739
 1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
 0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)
 Values only apply to test nozzle-and-holder assembly
 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.85
 company MAN
 engine D 2842 LE
 529 kW/2300 min⁻¹
 MAN-Nr. 2-7593
 Komb.-Nr. 0 401 840 724

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,2 - 4,3
 (4,15-4,35)

mm (from BDC)

Cyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,4+0,1	19,5-19,7	0,5 (0,9)			
250	6,9-7,1	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	19,2-20,8	550	20,0	10,4	1220-1235	250	7,0	100	min. 8,5	1150	11,4-11,5
VH = max. 46°				4,0	1415-1445			250	6,9-7,1	750	11,4-11,6
								315	355=2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1220-1235 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3		4	5	6	7
LDA	1,0 bar			LDA	1,0 bar	100	190,0-210,0
1150	195,0-197,0			750	200,0-206,0		(186,0-214,0)
	(192,0-200,0)				(197,0-209,0)		
				LDA	0 bar	250	17,0-23,0
				500	119,0-121,0		(14,0-26,0)
					(116,0-124,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 20,9 s

~ 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 P..LS 3828 + RQ..PA 739	1,0	0 0,30 0,52	11,4-11,5 8,9-9,0 9,2-9,3 10,7-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 14,2 e

2. Edition

En

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504

1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°) See page 2!

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 1.84
company Saab-Scania
DS 14 42
engine
Komb.-Nr. 0 402 678 801

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1
(4,95-5,15 mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	13,2±0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	350	4,0	-	-
	x = 6,0						350	4,4-4,6		
							440-500	= 2,0		
ca. 64	12,2	1090-1100								
2a	4,0	1160-1190								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
700	187,0-189,0 (184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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10.84

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 5.10.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-4-2-6-3-7-8

En

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,7 a 2
1. Edition

En

PE 8 P 120 A 320 LS 7801 RQ 300/1050 PA 762
Komb.-Nr. 0 402 648 817
1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Daimler-Benz
engine OM 442 a
260 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $5,2-5,3$ mm (from BDC) Cyl.8; RW = 20,0-21,0 mm
(5,15-5,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,6+0,2	19,2-19,4	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
700	-	C, Sp. 4 u. 5	0,8(1,2)			
500	-					
850	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,9	1095-1110	300	5,9	100	min.7,5	1050	12,8-13,0
VH = max. 46°				4,0	1170-1200			300	5,8-6,0	850	13,7-13,9
				1300	0-1,5			365-405 = 2,0		700	14,0-14,3

Torque-control travel
on flyweight assembly dimension a = 0,65 mm

Speed regulation: At 1095-1110 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	Control rod travel mm
LDA 600	0,65 bar 192,0-194,0 (189,0-197,0)	-		LDA 700	1,05 bar 205,0-209,0 (202,0-212,0)	100	175,0-190,0 (171,0-194,0)
LDA 1050	1,05 bar 179,0-182,0 (176,0-185,0)			LDA 500	0 bar 145,0-147,0 (142,0-150,0)		
850	201,0-205,0 (198,0-208,0)						

Checking values in brackets

6.86

D. Adjustment Test for Manifold Pressure Compensator

MB 14,7 a 2

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 7801 + RQ..PA 762	0,65	0,30	13,6-13,8
		0,40	11,9-12,1
		0,85	12,9-13,2
			13,7-13,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 21,9 h

1. Edition

En

PE 12 P 120 A 320 LS 7805-1 RSV 350-750 POA 825
1- 5- 9- 8- 3- 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes:
company Daimler-Benz
engine OM 444 LA
Komb.-Nr. 0 402 670 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) Cyl.12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
700	14,1+0,1	21,0-21,2	0,5 (0,9)			
350	5,4-5,6	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
loose	800	0,3-1,4	-	-	-	ca. 13	350	5,5	-	-
	x = 1,75						100	min.19,5		
ca. 25	13,1	750-755					350	5,4-5,6		
	4,0	780-790						**		
2a	1000	0,3-1,7								

The numbers denote the sequence of the tests ** Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
700	210,0-212,0 (207,0-215,0)	750-755*		650	197,0-213,0 (194,0-216,0)	100	210,0-230,0 (206,0-234,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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7.86

H3

H3

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 37,4 b

13. Edition

En.

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR
 Komb.-Nr. 0 406 039 109
 Governor adjustment according to VDT-I-420/112

Replaces 11.83
 Firm: MTU
 Engine: MB 838 Ca M

1- 2- 9- 10- 3 - 4 - 5 - 6 - 7 - 8
 0-45-72-117-144-189-216-261-288-333° ± 0,5° (± 0,75°)
 Note VDT-W-Allg./7 !

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,0-2,1} (1,95-2,15) mm (from BDC) Cyl. 10

Rotational speed min ⁻¹	Control-rod travel mm	Fuel delivery Average value cm ³ /1000 strokes	Difference in fuel delivery cm ³ /1000 strokes	Fuel delivery Checking values cm ³ /1000 strokes	Spring pre-tension (torque-control valve)
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	9,0 (14,0)		
900/550	-	C, Sp. 5	11,0 (16,0)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
max.	600	18,0-18,5	Sliding-block position			ca. 27	600	0,5-1,8	700	17,6-18,0
Ca. 58	1080	13,2					150	16,5-18,0	900	16,8-17,2
	12,2	1135-1145					350	9,0-12,5	1050	16,5-16,7
	5,0	1205-1235					425	5,3-5,8		
	0	1250-1295			1100	0,2-1,4	500	1,5-3,5		
					1140-1170	0	800	0,6-1,2		

Torque control travel a = 0,35 mm ± 0,03

Speed regulation: At 1130 min⁻¹ 1mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹	cm ³ /1000 strokes	min ⁻¹	min ⁻¹	cm ³ /1000 strokes	min ⁻¹	cm ³ /1000 strokes
1	2	3	4	5	6	7
1080	316,0-320,0 (313,0-323,0)	-	900	305,0-313,0 (301,0-317,0)	100	18,0-18,2 mm RW
			550	271,0-279,0 (267,0-283,0)	425	51,0-57,0
					High idle speed 1220 RW 3,0-3,1 mm 85,0-105,0	

Checking values in brackets

Shutoff solenoid 0,5-1,5 mm in front of stop.

05.85

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Testoil-ISO 4113

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 t 4

1. Edition

En

VE 6/12 F 1100 R 225-9 Overflow temperature 45° C
 0 460 426 075
 DHK: 1 688 901 027; 250 + 3 bar

supersedes CDC
 company 6 BT-5.9
 engine: 124 PS / 2200 min⁻¹

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/...

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	3,3-3,7 mm		
1.2 Supply-pump pressure	750	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	750	59,5-60,5 cm ³ /1000 strokes		4,0
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes		5,5
1.5 Full-speed regulation	1150	39,0-45,0 cm ³ /1000 strokes		
1.6 Start	100	min. 70,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,4-2,2(1,1-2,5)	750 (2,8-4,2)	1100 6,0-6,8(5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,9-3,5		1100 6,0-6,8
Overflow delivery	n = rev/min cm ³ /10 s	500 41-83(26-98)		1100 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1250 2000 1170 1150 1100 900 750 500	max. 2,0 max. 15 min. 15 (37,0-47,0) 56,0-59,0 (54,5-60,5) 59,0-62,0 (57,5-63,5) (57,0-63,0) 54,5-62,5 (54,8-62,2)	
switch-off			
Idle stop	350 375 500	17,0-26,0 (16,5-26,5) max. 4,0 (6,0-16,0)	
End stop	130 300	min. 70,0 max. 70,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	1,3-1,55
SVS	2,6
A XK	18,8-20,8
B XL	12,1-15,5

Observations
 Shutoff check ELAB at
 375 min⁻¹
 24 V pulling electro-
 magnet. Start-of-
 delivery blocking
 outlet "D"
 Stroke 1.5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 CUM 5,9 t

1. Edition

En

VE 6/12 F 1000 R 225-12 Overflow temperature 45°C
 0 460 426 081
 DHK: 1 688 901 027; 250 + 3 bar

supersedes CDC
 company: 6 BT-5.9 Case
 engine: 89 PS / 2000 min⁻¹

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	3,3-3,7 mm		
1.2 Supply-pump pressure	750	3,5-4,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	47,5-48,5 cm ³ /1000 strokes		4,0
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes		5,5
1.5 Full-speed regulation	1050	30,0-36,0 cm ³ /1000 strokes		
1.6 Start	100	min. 40,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,1-1,9(0,8-2,2)	750 (2,8-4,2)	1000 5,3-6,1(5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	200 0,8-1,4	500 2,4-3,0	1000 4,5-5,1
Overflow delivery	n = rev/min cm ³ /10 s	500 41-83(26-98)	1000 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1100 1090 1060 1050 1000 900 750 500	max. 2,0 max. 15,0 min. 15,0 (28,0-38,0) 44,5-47,5 (43,0-49,0) (45,0-51,0) 45,0-49,0 (44,0-50,0) 33,0-41,0 (33,3-40,7)		K KF MS SVS A XK B XL
switch-off				18,8-20,8 9,1-12,5
Idle stop	375 450	max. 4,0 (6,0-16,0)		Observations
End stop	200 370	min. 45,0 max. 50,0		Shutoff check ELAB at 375 min ⁻¹ 24 V pulling electro- magnet. Start-of- delivery blocking outlet "D" Stroke 1.5 mm
2.4 Solenoid	— cut-in voltage			

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 t 1

1. Edition

En

Testoil-ISO 4113

VE 6/12 F 1100 R 225-13 Overflow temperature 45° C
 0 460 426 082
 DHK: 1 688 901 027; 250 + 3 bar

supersedes
 company CDC
 engine: 6 BT-5.9
 142 PS bei / min⁻¹

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	3,4-3,8 mm		
1.2 Supply pump pressure	750	3,5-4,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	71,5-72,5 cm ³ /1000 strokes		4,0
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes		5,5
1.5 Full-speed regulation	1140	53,0-59,0 cm ³ /1000 strokes		
1.6 Start	100	min. 60,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,5-2,3 (1,2-2,6)	750 (2,9-4,3)	1100 5,2-6,0 (4,9-6,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,4-3,0		1100 4,8-5,4
Overflow delivery	n = rev/min cm ³ /10 s	500 41-83 (26-98)		1100 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1220 1200 1180 1140 1100 900 750 500	max. 3,0 max. 15,0 min. 15,0 (51,0-61,0) 66,5-69,5 (65,0-71,0) (69,0-75,0) 70,5-74,5 (69,5-75,5) 53,0-61,0 (53,3-60,7)		K KF MS SVS 1,4
switch-off				A XK B XL 20,2-22,2 10,5-13,9
Idle stop	350 375 450	20,0-28,0 (19,0-29,0) max. 4,0 (6,0-16,0)		Observations Shutoff check ELAB at 375 min ⁻¹ 24 V pushing electronagnet magnet. Start-of- delivery blocking outlet "D" Stroke 1.5 mm
End stop	130 240	min. 60 max. 60		
2.4 Solenoid	cut-in voltage			

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9e
1. Edition

En

Testoil-ISO 4113

VE 4/12 F 1400 R 230
0 460 424 026

Overflow temperature 45° C

DHK: 1 688 901 027; 250 + 3 bar

supersedes CDC
company: 4BT-3,9
engine: 107 PS / 2800 min⁻¹

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	1,8- 2,2 mm	1,0	
1.2 Supply-pump pressure	1100	4,7- 5,3 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	900	69,5-70,5 cm ³ /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	36,5-37,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes	0	5,5
1.5 Full-speed regulation	1500	44,0-50,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 40,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications checking values in brackets ()

2.1 Timing device LDA=1,0 bar	n = rev/min mm	900 0,3-1,1 (0-1,4)	1100 (1,3-2,7)	1250 2,6-3,4 (2,3-3,7)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	500 2,1-2,7		1400 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 41-83 (26-98)		1400 (1,0 bar) 55-138 (40-153)

2.3 Fuel deliveries				3. Dimensions <small>for assembly and adjustment mm</small>	
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	Designation	
End stop	1650	max. 2,0	1,0	K	-
	1620	max. 15,0	1,0	KF	5,1-5,4
	1590	min. 15,	1,0	MS	0,9-1,15
	1500	(42,0-52,0)	1,0	SVS	3,8
	1400	64,5-67,5 (63,0-69,0)	1,0		
	1100	66,5-69,5 (65,0-71,0)	1,0		
	900	(67,0-73,0)	1,0		
	700 *	67,0-68,0 (64,5-70,5)	0,4		
	500	73,5-81,5 (73,8-81,2)	1,0		
	500	(34,0-40,0)	0		
switch-off				A XK	18,8-20,8
				B XL	9,8-13,2
Idle stop	375	(6,0-16,0)		Observations Shutoff check ELAB at 375 min ⁻¹ *LDA-stroke 6,0 mm Start-of-delivery blocking outlet "D" Stroke 1,66 mm	
	600	max. 4,0			
End stop	150	min. 40,0			
	380	max. 40,0			
2.4 Solenoid	--- cut-in voltage --- min. 10 Volt rated voltage 12 V.				

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 CUM 3,9d
1. Edition

En

VE 4/12 F 1250 R 230-1 Overflow temperature 45° C
0 460 424 027
DHK: 1 688 901 027; 250 + 3 bar

supersedes -
company: CDC
engine: 4BT-3.9
107 PS / 2500 min⁻¹

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	1,8- 2,2 mm	1,0	
1.2 Supply-pump pressure	1100	4,7- 5,3 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	900	69,5-70,5 cm ³ /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	36,5-37,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	340	8,0-14,0 cm ³ /1000 strokes	0	5,5
1.5 Full-speed regulation	1330	49,0-55,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 40,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=1,0 bar	n = rev/min mm	900 0,3-1,1 (0-1,4)	1100 (1,3-2,7)	1200 2,4-3,2 (2,1-3,5)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	500 2,1-2,7	1250 5,4-6,0	
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 41-83 (26-98)	1250 (1,0 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1500	max. 2,0	1,0
	1480	max. 15,0	1,0
	1430	min. 15,0	1,0
	1330	(47,0-57,0)	1,0
	1250	65,5-68,5 (64,0-70,0)	1,0
	1100	66,5-69,5 (65,0-71,0)	1,0
	900	(67,0-73,0)	1,0
	700 *	67,0-68,0 (64,5-70,5)	0,4
	500	73,5-81,5 (78,8-81,2)	1,0
switch-off	500	(34,0-40,0)	0
Idle stop	340	(6,0-16,0)	
End stop	500	max. 4,0	
	150	min. 40	
	380	max. 40	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	0,9-1,15
SVS	3,8
A XK	18,8-20,8
B XL	8,4-11,8

Observations
Shutoff check ELAB at
340 min⁻¹
*LDA-stroke 6,7 mm
Start-of-delivery
blocking outlet "A"
Stroke 1,66 mm

2.4 Solenoid

cut-in voltage min. 10 Volt
rated voltage 12 V.

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9c
1. Edition

En

Testoil-ISO 4113

VE 4/12 F 1150 R 231-1 Overflow temperature 45° C
0 460 424 029
DHK: 1 688 901 027; 250 + 3 bar

supersedes CDC
company: 4BTA-3.9
engine: 114 PS / 2300 min⁻¹

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

0,3 mm ± 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	850	4,0-4,4 mm	1,0	
1.2 Supply-pump pressure	850	5,6-6,2 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	850	85,5-86,5 cm ³ /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	63,5-64,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes	0	5,5
1.5 Full-speed regulation	1220	62,5-68,5 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 60,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications checking values in brackets ()

2.1 Timing device LDA=1,0 bar	n = rev/min mm	500 1,8-2,6 (1,5-2,9)	1100 (3,5-4,9)	1200 5,2-6,0 (4,9-6,3)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	500 4,0-4,6		1150 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 41-83 (26-98)		1150 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1320	max. 2,0	1,0
	1300	max. 15,0	1,0
	1260	min. 15,0	1,0
	1220	(60,5-70,5)	1,0
	1150	76,0-79,0 (74,5-80,5)	1,0
	1000	79,5-82,5 (78,0-84,0)	1,0
	850	(83,0-89,0)	1,0
	700 *	79,5-80,5 (77,0-83,0)	0,35
	500	90,0-98,0 (90,3-97,7)	1,0
	500	(61,0-67,0)	0
switch-off			
Idle stop	350	24,0-32,0 (23,0-33,0)	
	375	(6,0-16,0)	
	450	max. 4,0	
	130	min. 60	
	230	max. 60	
2.4 Solenoid	cut-in voltage min. 10 Volt rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,3
MS	1,1-1,35
SVS	2,7
A XK	18,8-20,8
B XL	12,4-15,8

Observations
Shutoff check ELAB at
375 min⁻¹
*LDA-stroke 6,6 mm
Start-of-delivery
blocking outlet "A"
Stroke 1,55 mm

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 CUM 5,9t3
1. Edition

En

VE 6/12 F 1400 R 232 Overflow temperature 45° C
0 460 426 077
DHK: 1 688 901 027; 250 + 3 bar

supersedes -
company: CDC
engine: 6BT-5.9
163 PS / 2800 min⁻¹

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	900	4,2-4,6 mm	1,0	
1.2 Supply-pump pressure	900	4,1-4,7 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	900	67,0-68,0 cm ³ /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	30,5-31,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	8,0-14,0 cm ³ /1000 strokes	0	5,5
1.5 Full-speed regulation	1500	49,0-55,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 45 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=1,0 bar	n = rev/min mm	500 0,4-1,2 (0,1-1,5)	900 (3,7-5,1)	1100 5,5-6,3 (5,2-6,6)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	500 2,4-3,0		1400 6,1-6,7
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 41-83 (26-98)		1400 (0 bar) 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1650	max. 3,0	1,0
	1620	max. 15,0	1,0
	1590	min. 15,0	1,0
	1500	(47,0-57,0)	1,0
	1400	61,5-64,5 (60,0-66,0)	1,0
	1100	64,5-67,5 (63,0-69,0)	1,0
	900	(64,5-70,5)	1,0
	700 *	59,0-60,0 (56,5-62,5)	0,5
	500	65,5-73,5 (65,8-73,2)	1,0
switch-off	500	(28,0-34,0)	0
Idle stop	350	18,0-30,0 (19,0-29,0)	
	375	(6,0-16,0)	
	450	max. 4,0	
	300	min. 55	
End stop	480	max. 55	
2.4 Solenoid	cut-in voltage min. 10 Volt rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	1,2-1,45
SVS	
A XL	20,2-22,2
B XL	10,2-13,6
Observations	
Shutoff check ELAB at 375 min ⁻¹	
*LDA-stroke 6,7 mm	
Start-of-delivery blocking outlet "D"	
Stroke 1.1 mm	

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 CUM 5,9 t 2

1. Edition

En

Testoil-ISO 4113

VE 6/12 F 1250 R 232-1 Overflow temperature 45° C
 0 460 426 078
 DHK: 1 688 901 027; 250 + 3 bar

supersedes
 company CDC
 engine: 6 BT-5.9
 163 PS / 2500 min⁻¹

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	900	3,9-4,3 mm	1,0	
1.2 Supply-pump pressure	900	3,7-4,3 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	900	66,0-67,0 cm ³ /1000 strokes	1,0	4,0
Full-load delivery without charge-air pressure	500	30,5-31,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	360	8,0-14,0 cm ³ /1000 strokes	0	5,5
1.5 Full-speed regulation	1330	50,5-56,5 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 45 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	700	900	1100
LDA = 1,0 bar	mm	1,6-2,4 (1,3-2,7)	(3,4-4,8)	5,3-6,1 (5,0-6,4)
2.2 Supply pump	n = rev/min	350	700	1100
LDA = 1,0 bar	bar (kgf/cm ²)	1,2-1,8	2,8-3,4	4,5-5,1
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 46-83 (26-98)	1250 (1,0 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1550	max. 2,0	1,0
	1470	max. 15,0	1,0
	1430	min. 15,0	1,0
	1330	(48,5-58,5)	1,0
	1250	63,5-66,5 (62,0-68,0)	1,0
	1100	64,0-67,0 (62,5-68,5)	1,0
	900	(63,5-69,5)	1,0
	700*	60,0-61,0 (57,5-63,5)	0,5
	500	61,5-75,5 (67,8-75,2)	1,0
	switch-off	(28,0-34,0)	0
Idle stop	360	(6,0-16,0)	
	340	max. 4,0	
	300	min. 55	
	480	max. 55	
2.4 Solenoid	cut-in voltage min. 10 Volt rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	1,2-1,45
SVS	0,6
A XK	20,2-22,2
B XL	9,0-12,4

Observations
 Shutoff check ELAB at
 360 min⁻¹
 *LuA-stroke 7,0 mm
 Start-of-delivery
 blocking outlet "D"
 Stroke 1.1 mm

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 31.7 g 2

1. Edition

En.

PE 8 ZWM 160 / 100 RS 2001-2
Komb.-Nr. 0 406 008 024

8-1 -2 - 6 - 3 - 4 - 5 - 7

0-45-90-135-180-225-270-315° ± 0,5° (± 0,75°)

Replaces -

Firm: MTU

Engine: 8 V 396-03
960 kW

See page 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) cyl 1.8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-133	

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor settings

Upper rated speed				Medium rated speed				Lower rated speed				Torque control	
Control lever deflection degrees	mm min ⁻¹	Control-rod travel mm	min ⁻¹	Control lever deflection degrees	mm min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm	min ⁻¹
1	2	3		4	5	6		7	8	9		10	11
-	-	-		-	-	-		-	-	-		-	-

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7	min ⁻¹ 8
Adjust according to the engine records.							

Checking values in brackets

7.86

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Note:

Fuel-injection pump has special control rod for partial cutoff of particular cylinders.

"0" control-rod travel corresponds to 1.0 mm clearance of the control-rod canister from the stop plate at the end face.

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 31,7 h1

1. Edition

En.

PE 8 ZWM 160/100 RS 2006
Komb.-Nr. 0 406 008 025

Replaces -

Firm: MTU

Engine: 8 V 396-03
960 kW

8- 1- 2- 6 - 3 - 4 - 5 - 7

0-45-90-135-180-225-270-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDC) cyl 1.8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622-636	20 (30)	619-639	-
1000	9,0	220-248	28 (42)	215-253	
300	9,0	104-128	16 (24)	99-135	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed		Control-rod travel		Medium rated speed		Control-rod travel		Lower rated speed		Control-rod travel		Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	mm 3	min ⁻¹ 4	Control lever deflection degrees 5	mm 6	Control lever deflection degrees 7	mm 8	Control lever deflection degrees 9	mm 10	Control lever deflection degrees 11	mm 12	Control lever deflection degrees 13	mm 14
-	-	-	-	-	-	-	-	-	-	-	-	-	-

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	cm ³ /1000 strokes 4	min ⁻¹ 5	cm ³ /1000 strokes 6	min ⁻¹ 7	cm ³ /1000 strokes 8
Adjust according to the engine records.							

Checking values in brackets

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Note:

"0" control-rod travel corresponds to 1.0 mm clearance of the control-rod canister from the stop plate at the end face.

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 IHC 13,4 a
1. Edition

En

PES 6 P 110/420/3 LS120 EP/RSV 300-800 P2/319D,337D
300-1050 P2/320D,322D,327D,324,331
300-1100 P2/321
Test details see page 4! 300- 950 P2/323D,328D
...-... PO/...

supersedes I H C
company
engine DTJ 817 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	8	6,9 - 7,3	0,4			
600	6	2,5 - 3,7				
600	12	13,7 - 15,0				
600	15	19,4 - 20,7				
200	6	4,7 - 5,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7 8 9			3 Torque control rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9			
			see page 2							
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40 °C (104 °F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop rev/min 8		Control rod travel mm 9
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7				
		see page 3								

Checking values in brackets

* 1 mm less control rod travel than col 2

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H17

H17

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	control travel mm
1	2	3	4	5	6	7	8	9	10	11

300-800 P 2/319 Dr. .. P 0/319 Dr, .. P 0/337 DR

ca.35,5 800 16,0
 860 11,7 *
 920 5,8
~~880 8,0-11,0~~
 950 3,1- 5,2 **
 1070 0 - 2

ca.18 300 5,5 780 0
 150 20 - 21
 300 5,2-5,8 650 0,3-0,5
~~450 3,1-4,5~~
 600 0 - 2 400 0,8-1,0

300-1050 P2/320 Dr, .. P 0/320 DR

ca.43 1050 16,0
 1120 10,6 *
 1170 6,0
 1130 8,4-10,8
 1200 3,7- 6,5 **
 1340 0 - 2

ca.20 300 6,0 1030 0
 150 20 - 21
 300 5,7-6,3 800 0,2-0,4
 450 3,1-4,5 400 0,2-0,4
 640 0

300-1100 P 2/321, ..P 0/321 R

ca.44 1100 16,0
 1160 11,4 *
 1210 6,7
 1180 8,4-10,9
 1250 3,8-5,6 **
 1380 0 - 2

ca.19 300 6,0
 150 20 - 21 - -
 300 5,7-6,3 Adjust on
 450 2,9-4,4 engine as
 630 0 - 2 required

300-1050 P 2/322 Dr, ..P 2/327DR, .. P 0/..

ca.43 1050 16,0
 1120 10,6 *
 1170 6,0
 1130 8,4-10,6
 1200 3,6-5,4 **
 1340 0 - 2

ca.20 300 6,0 1030 0
 150 20 - 21
 300 5,7-6,3 800 0,3-0,5
 450 3,0-4,5 400 0,4-0,6
 630 0 - 2

300 - 950 P 2/323 Dr, ..P 2/328 Dr, ..P 0/..

ca. 40 950 16,0
 1020 10,6 *
 1060 6,9
 1020 9,5-11,6
 1150 1,8- 4,2 **
 1250 0 - 2

ca.20 300 6,0 930 0
 150 20 - 21
 300 5,7-6,3 600 0,1-0,3
 450 2,9-4,4 400 0,1-0,3
 630 0 - 2

300-1050 P 2/324 R, ..P 0/.. ..P 2/331 R

ca.43 1050 16,0
 1120 10,8 *
 1160 7,0
 1130 8,2-10,8
 1200 4,0- 5,6 **
 1340 0 - 2

ca.20 300 6,0
 150 20 - 21
 300 5,7-6,3
 450 3,0-4,4
 630 0 - 1

* without auxiliary spring

** with auxiliary spring

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

IHC 13,4 a

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Governor	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
780	140 - 142	800: 0,1-0,3 *	500	165 - 169	100	mind. 20	..P2/319 DR ..P0/319 DR	
1030	156 - 158	1050:0,1-0,3 *	500	213 - 217	100	mind. 18,5	..P2/320 DR ..P0/320 DR	
			500	107 - 111				
1080	180 - 182	1100:0,1-0,3 *	500	138 - 142	100	mind. 18,5	..P2/321 R ..P0/321 R	
1030	128 - 130	1050:0,1-0,3 *	500	174 - 178	100	mind. 20	..P2/322 DR ..P0/322 DR	
930	138 - 140	950:0,1-0,3 *	500	189 - 193	100	mind. 20	..P2/323 DR ..P0/323 DR	
1030	105 - 107	1050:0,1-0,3 *			100	mind. 20	..P2/324 DR ..P0/324 DR	
1030	135 - 137	1050:0,1-0,3	500	176 - 180	100	mind. 20	..P2/327 DR ..P0/327 DR	
930	139 - 141	950:0,1-0,3 *	500	189 - 193	100	mind.18,5	..P2/328 DR ..P0/328 DR	
			500	140 - 144				
1030	158 - 160	1050:0,1-0,3 *	500	110 - 114	100	mind.18,5	..P2/331 R	

Testoil-ISO 4113

When checking (column 3 and 5) increase by 1 cm³!

Test with nozzle 0 681 443 014 - EFEP 182 or complete nozzle-holder assembly 0 681 343 009 - EF 8511/9a and overflow valve 1 417 413 025 - EPVE 176 P 2 Z, supply pressure 1.5 kp/cm² (flushing).

Refer to BMP 115/9 for connection parts and modified port-closing measuring device.

1. Set start of delivery on prestroke.
(Conversion of device 1 688 130 085 - EFEP 388 A and plug on drive end)

On outlet 1 start of delivery, check timing pin at SP-flange to see whether pressing in the pin causes it to engage in the camshaft. Move and secure flange if necessary.

2. Set fuel delivery - section A of test-specification sheet - (refer to BMP for connection parts)
3. Test governor - Section B - without manifold-pressure compensator
4. Set full-load delivery - Section C, Column 1-2 - when equipped with manifold-pressure compensator, set larger full-load delivery with manifold-pressure compensator removed.
- 4.1 Correct fuel-delivery characteristics - Column 4-5 with torque-control retainer.
Check whether full-load delivery unchanged.
- 4.2 Rotational-speed limitation - Column 3 - at upper rated speed, control-rod travel must be 0.1 - 0.3 mm less than with full-load delivery as per Column 1-2.
- 4.3 Pre-adjust removed manifold-pressure compensator:
Unscrew stop screw in diaphragm housing.
Start of adjustment 0.1 kp/cm², end of adjustment 0.4 kp/cm²; adjust if necessary by way of washers beneath diaphragm spring.

Set manifold pressure 0.7 kp/cm². Use depth gauge to measure immersion depth of stop pin in manifold-pressure compensator without seal: Set immersion depth of 15.7 ± 0.1 mm at screw and lock nut and secure with tab washer.

Limit travel of stop pin between 0 and 0.5 kp/cm² = approx. 4.1 mm at stop screw of diaphragm housing.
Make sure all parts move freely when carrying out adjustment!
- 4.4 Attach manifold-pressure compensator.
With stop screw in diaphragm housing set smaller full-load delivery as per Column 4-5 (= Fuel delivery on induction)
5. Check starting control-rod travel as per Column 6-7 (without manifold pressure).

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4 IHC 13,4 b

2. Edition

En

PES 6 P 110/420/3 LS 137 EP/RSV 300-1100 P0/332D,335,364,380 superseded 12.70

300-1050 P0/333D,334,350, company I H C

334D, 350D, 360D, 363D

engine DTJ 817 B

Test details see page 4!-

300- 950 P0/336D

300- 800 P0/337D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	8	9,8 - 10,4	0,5			
600	6	5,0 - 6,2				
600	12	17,7 - 19,4				
600	15	23,9 - 26,1				
200	6	5,4 - 6,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
			see page 2							
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
		see page 3							

Checking values in brackets

* 1 mm less control rod travel than col 2

12.72

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Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1050 P0/332 Dr, 334 DR, 350 DR, 363 DR

ca.43 1050 16,0
1120 10,6
1170 6,0

*

ca.20 300 6,0
150 20 - 21
300 5,7-6,3
450 3,1-4,5
640 0 - 2

1030 0
400 0,2-0,4

300-1050 P0/333DR

ca.43 1050 16,0
1120 10,6
1170 6,2

*

ca.20 300 6,0
150 19 - 21
300 5,7-6,3
450 3,0-4,4
640 0 - 2

1030 0
400 0,4-0,6

300-1050 P0/334 R, ..P0/350 R

ca.43 1050 16,0
1120 10,6
1170 6,0

*

ca.20 300 6,0
150 20 - 21
300 5,7-6,3
450 3,0-5,4
630 0 - 2

1030 0
500 0
360 1,2-1,8

300-1100 P0/335R, 364R,380

ca.44 1100 16,0
1160 11,2
1210 6,6

*

ca.19 300 5,5
150 20 - 21
300 5,2-5,7
400 0 - 2

- -
Adjust on engine as required

300-950 P0/336 DR

ca.40 950 16,0
1020 10,6
1070 6,2

*

ca.20 300 6,0
150 20 - 21
300 5,7-6,3
450 2,9-4,4
630 0 - 2

930 0
400 1,6-1,8

300-800 P0/337DR

ca.35 800 16,0
860 11,7
920 5,8

*

ca.18 300 5,5
150 20 - 21
300 5,2-5,8
450 2,3-3,8
600 0 - 2

780 0
550 0,3-0,5
400 0,8-1,0

300-1050 P0/360 DR

ca.43 1050 16,0
1120 10,5
1170 6,0

*

ca.20 300 6,0
150 20 - 21
300 5,7-6,3
450 3,0-4,5
630 0 - 2

1300 0
400 0,1-0,3

Testoil-ISO 4113

* without auxiliary spring

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation rev/min	Fuel delivery characteristics		Starting fuel delivery idle switching point		Governor Idle speed/stop U/min cm ³ /1000	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1080	162 - 164	1125:0,5-1,5	600	205 - 209	100	mind.18,5	..PO/332R	
600	123 - 127	*	1200	3 mm RW			325 = 25-35	
1030	138 - 140	1075:0,5-1,5	800	165 - 169	100	mind.18,5	..PO/333DR	
		*	1155	3 mm RW			1 mm vor Stop	
1030	147 - 149	1075:0,5-1,5			100	mind.18,5	..PO/334R	
		*					325 = 25-35	
1030	151 - 153	1075:0,5-1,5	800	172 - 176	100	mind.18,5	..PO/334DR	
		*					325 = 25-35	
800	123 - 127		1145	3 mm RW				
1080	192 - 194	1125:0,5-1,5	-	- -	100	mind.18,5	..PO/335R,380	
		*					325 = 25-35	
1080	109 - 113		1200	3 mm RW				
930	156 - 158	975:0,5-1,5	700	203 - 207	100	mind.18,5	..PO/336DR	
		*					1 mm vor Stop	
700	150 - 154		1035	3 mm RW				
780	151 - 153	825:0,5-1,5	600	185 - 189	100	mind.18,5	..PO/337R	
		*					1 mm vor Stop	
			870	3 mm RW				
1030	113 - 115	1075:0,5-1,5	350R: 1135	3 mm RW	100	mind.18,5	..PO/350R ..PO/350DR	
		*	350DR: Attach retainer				325 = 25-35	
1030	158 - 160	1075:0,5-1,5	700	203 - 207	100	mind.18,5	..PO/360DR	
		*					325 = 25-35	
700	147 - 151		1155	3 mm RW				
							..PO/363DR	
1080	192 - 194	1125:0,5-1,5			100	mind.18,5		
		*						
1080	5,4mm RW *		1200	3 mm RW			..PO/364 R	

When checking extend by $\pm 1 \text{ cm}^3$ (col 4 and 5)!

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

1

Test with nozzle 0 681 443 014 - EFEP 182 or complete nozzle-holder assembly
0 681 343 009 - EF 8511/9a and overflow valve 1 417 413 025 - EPVE 176 P 2 Z, supply
pressure 1.5 kp/cm² (scavenging).

Connecting components and modified start-of-delivery measuring device, see
VDT-BMP 115/9.

1. Adjust start of delivery at prestroke.
(Conversion of the device 1 688 130 085 - EFEP 388 A and plug on drive side)

At start of delivery, exhaust port 1, check device (timing pin) at FP flange to
see whether the pin latches into the camshaft when it (the pin) is pressed in. If
necessary, reposition flange and secure.

2. Adjust fuel delivery - Section A of the test sheet - (for connecting components,
see VDT-BMP 115/9).
3. Test governor - Section B - preadjustment without manifold-pressure compensator
(for special adjustment, see Points 4.2 and 4.3)
4. Section C, adjust full-load delivery - column 1-2 for equipment with
manifold-pressure compensator, set higher full-load delivery when
manifold-pressure compensator disassembled (note control-rod travel (in mm) for
Point 4.2).
- 4.1 Fuel-delivery curve - column 4-5, correct with torque-control spring retainer.
Check whether full-load delivery is unchanged.
- 4.2 Engine-speed limitation: at maximum full-load speed + 25 r/min., control-rod
travel must be 0.5 - 1.5 mm less than at full-load delivery given in column 2.
Adjust maximum-speed stop screw.
- 4.3 High idle: test according to column 4-5; to obtain the specified control-rod
travel, alter pretension of the rocker if necessary (tolerance ± 10 r/min). Check
whether engine-speed limitation (Point 4.2) is unchanged.
- 4.4 Preset manifold-pressure compensator while in disassembled state: (for
manifold-pressure compensator ..004 and ..007)
Screw out stop screw from diaphragm housing.

Governor ..PO/332, /335

380

0.14-0.27

Start of adjustment = 0.3 kp/cm²

End of adjustment = 1.1 kp/cm²

..PO/336/360, /364

Start of adjustment = 0.15 kp/cm²

End of adjustment = 0.7 kp/cm²

adjust as required by pushing beneath the diaphragm spring.

At 1.5 kp/cm² charge-air pressure, set an immersion depth of 15.75 + 0.1 mm
(contact surface of stop pin up to end face without gasket).

Pretension of the spring, measured at the contact surface of the stop pin, must
be 6.15 \pm 0.65 kp.

If readjustment of the immersion depth is necessary, adjusting screw and lock nut
must be adjusted simultaneously so that spring pretension of the elastic element
is maintained.

Limit travel of the stop pin to between 0 - 1.5 kp/cm², charge-air pressure =
5.1 - 5.6 mm at the stop screw of the diaphragm housing.

Make sure that all components move freely when adjusting the charge-air pressure!

- 4.5 Mount manifold-pressure compensator.

Using stop screw at top in diaphragm housing, adjust minimum full-load delivery
in accordance with column 1-2 (fuel delivery under induction operation).

5. Test start control-rod travel - column 6-7 (without charge-air pressure).
6. Adjust idle stop/shutoff stop - column 8.

1A

VDT-WPP 001/4 IHC 9,4b
Edition

En

supersedes	1.71
company	IHC
engine	DV 573..

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Instruction:
Test details see page 4!

Port closing at prestroke $2,8 \pm 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10	9,0-9,6	0,4			
600	6	1,3-2,3				
600	12	10,7-12,2				
600	15	11,4-12,9				
200	6	4,1- 5,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a			see page 2							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

[illegible]

Checking values in brackets

* 1 mm less control rod travel than col. 2

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque	control travel mm
1	2	3	4	5	6	7	8	9	10	11

300-1225 PC/341 D

ca.66	1225	16,0	*			ca.35	300	6,0	1200	0
	1320	12,1								
	1450	5,1							600	0 - 0,2
300-1150 PO/343 D										
ca.62	1150	16,0	*			ca.33	300	6,0	1130	0
	1280	10,7								
	1400	3,8							600	0,1-0,3

300-1300 PO/344, 359

ca.69	1300	16,0	*			ca.35	300	6,0		
	1420	10,3								
	1540	2,7								
300-1200 PO/345 D										
ca.67	1200	16,0	*			ca.37	300	6,0	1180	0
	1330	10,8								
	1470	2,8								
									600	0,3-0,5

300-1150 PO/346 D

ca.66	1150	16,0	*			ca.37	300	6,0	1130	0
	1320	9,3							600	0,5-0,7
	1440	2,6								

300-1250 PO/348 D, 362D

ca.66	1250	16,0	*			ca.35	300	6,0	1230	0
	1400	9,0							600	0,2-0,4
	1500	2,8								

--	--	--	--	--	--	--	--	--	--	--

En * without auxiliary spring -2-

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

IHC 9,4 b

Full-load stop Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Governor Idle speed/stop U/min cm³/1000	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1205	85,5-87,5	1250:0,5-1,5	900	98 - 101	100	14,5-17,5	..50/341D	
900	47,5-51,5	* **(VH ca.61°)	1350	3,, RW			300 = 10 - 22	
1130	79,5-81,5	1175:0,5-1,5	800	93,5-96,5	100	14,5-16,5	..P0/343D	
800	53,5-57,5	* **(VH ca.57°)	1260	3 mm RW			300 = 10 - 22	
1280	98 - 100	1325:0,5-1,5	1430	3 mm RW	100	14,5-16,5	..P0/344	
1280	62 - 66	* **(VH ca.64°)					300 = 10 - 22	
1180	70,5-72,5	1225:0,5-1,5	850	84,0-87,0	100	14,5-16,5	..P0/345D	
		* **(VH ca.61°)	1320	3 mm RW			1 mm in front of stop	
1130	67,5-69,5	1175:0,5-1,5	800	85,0-88,0	100	14,5-16,5	..P0/346D	
		*	1320	3 mm RW			1 mm in front of stop	
1230	94,5-96,5	1275:0,5-1,5	900	110-113	100	14,5-16,5	..P0/346D	
900	56,0-60,0	* **(VH ca.62°)	1375	3 mm RW			300 = 10 - 22	
1280	98 - 100	1325:0,5-1,5	1430	3 mm RW			..P0/350	
1280	55 - 59	* **(VH ca.64°)					300 = 10 - 22	
1330	83,5-85,5	1275:0,5-1,5	900	98 - 101			..P0/362D	
900	49 - 53	* **(VH ca.62°)	1375	3 mm RW			300 = 10 - 22	

When checking (column 3 and 5) increase by 1 cm³!

** Control lever

Testoil-ISO 4113

Checking values in brackets

-3-

* 1 mm less control rod travel than col 2

Test equipment and holding parts as per WPP 115/1 - 1st supplement.

Connection parts as per BMP 115/9

1. Set start of delivery on prestroke; test angular cam spacing.
(Please observe designation of outlets as per WJP 115/1 and give appropriate consideration to BMP 115/5.)

1 - 4 - 7 - 2 - 6 - 3 - 5 - 8 - 1
0 -90 -105-135-195-225-240-330-360°

2. Set fuel delivery - Section A of test-specification sheet - (refer to BMP.. for connection parts)
3. Test governor - Section B - pre-adjustment without manifold-pressure compensator (refer to Items 4.2, 4.3 and 4.4 for special setting)
4. Set full-load delivery - Section C, Column 1-2 -
when equipped with manifold-pressure compensator, set larger full-load delivery with manifold-pressure compensator removed.
- 4.1 Correct fuel-delivery characteristics - Column 4-5 with torque-control retainer. Check whether full-load delivery unchanged.
- 4.2 Rotational-speed limitation: at upper rated speed + 25 rpm (+5), control-rod travel must be 0.5-1.5 mm less than with full-load delivery as per Column 2.
Position end stop screw.
- 4.3 High idle: test as per Column 4-5; change pre-tension of rocker if necessary (tolerance ± 10 rpm) to attain prescribed control-rod travel (± 0.1). Check whether rotational-speed limitation (Item 4.2) unchanged.
- 4.4 Perform idle-position regulation, then position auxiliary spring at tensioning lever, turn back 1 turn and secure.
- 4.5 Pre-adjust removed manifold-pressure compensator: unscrew stop screw in diaphragm housing.

Start of adjustment 0.07-0.20 kp/cm²
End of adjustment 0.62-0.75 kp/cm²

Adjust if necessary by way of washers beneath diaphragm spring.

At 1.5 kp/cm² manifold pressure, set immersion depth of 15.75 \pm 0.1 mm (contact surface of stop pin to end face without seal).

Pre-tension of spring measured at contact surface of stop pin must be 6.15 \pm 0.65 kp.

If the immersion depth has to be adjusted, the adjusting screw and lock nut must be adjusted simultaneously, so as to maintain the spring preload of the spring-mounted element.

Limit travel of stop pin between 0 and 1.5 kp/cm² manifold pressure = 4.70-4.85 mm at stop screw of diaphragm housing.
Make sure all parts move freely when adjusting manifold pressure!

- 4.6 Attach manifold-pressure compensator.

With stop screw in diaphragm housing set smaller full-load delivery as per Column 1-2. (= Fuel delivery on induction)

5. Test starting control-rod travel - Column 6-7 (without manifold pressure).
6. Set idle/shutoff stop - Column 8

En

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

6. Edition

En

PES 6 P 100 A 720 RS 1010

EP/RSV 400-1050 P2/370 D

supersedes 12.74 (4)
company John Deere
engine 6531 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,8	14,8-15,0	0,3			
400	6,7	1,9-2,5	0,3			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV ..370 D

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 43	1050 1100 1150	15,6-16,4 6,2- 9,6 3,8- 5,2	without auxiliary spring			ca. 19	400	7,2	1050	0
	1220 1260	0,3- 2,6 0,3- 1,5					200 350 400 600 750	19-21 11-14 7,2 1,4-4,2 0 -1,5	750 500	0,8-1,0 0,8-1,0
2a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1,0	bar	1085-1095	1155	24 - 32	100	160-190			
1050	148,0-150,0		XX		400	19-25			
750	164,5-167,5								
	0 bar								
550	108-116								

Checking values in brackets

* 1 mm less control rod travel than col 2

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J5

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B. Governor Settings

EP/RSV ..370DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.38	1040	16,0	without auxiliary spring			ca.17	400	7,2	1050	0
	1080	11,2				200	19 - 21	800	0,6-0,8	
	1120	5,2				400	6,9-7,5	500	0,8-1,0	
	1050	ca.10,6	with auxiliary spring			550	3,3-5,1			
	1100	ca. 4,7				780	0-1			
	1280	0,3-1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	1,0 bar	1085-1095*		LDA	0 bar	100	160 - 180		
1050	151,0-153,0			550	108,0-116,0				
750	161,0-167,0			1150	24,0 - 44,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at $n = 500$ rev/min decreasing pressure - in bar gauge pressure

Ppe 1010 -3-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
1010 with 370 DR:	0,62	0,20	- 0,2 mm - 2,3 mm

Notes

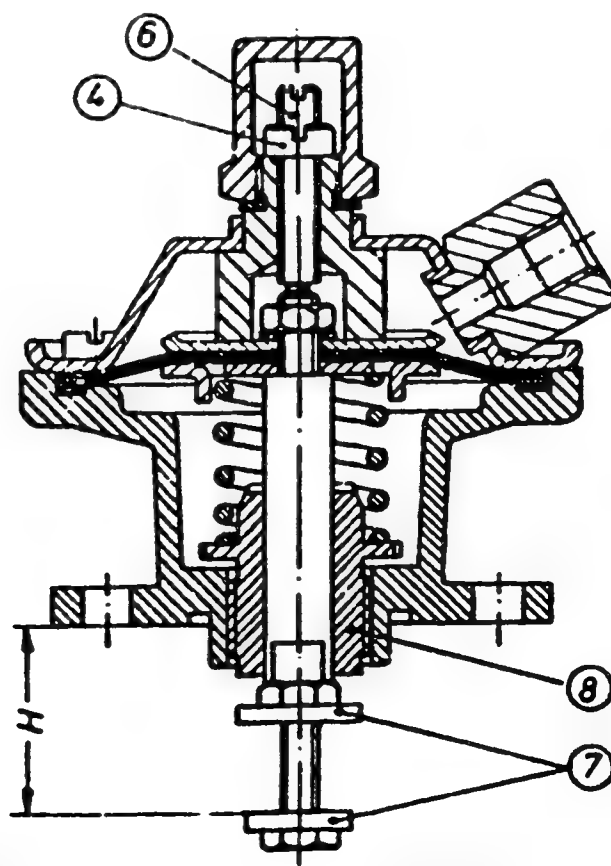
(1) when $n = 500$ rev/min and gauge pressure = 1,0 bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test sequence:

1. Basic setting of pump and governor (Section A-B) without manifold-pressure compensator.
2. Adjust full-load delivery - delivery indication max. charge-air pressure - with full-load stop screw of governor. Measure fuel-delivery characteristics at 750 rpm; correct if necessary with torque-control retainer.
3. Pre-adjustment of manifold-pressure compensator: set dimension H - contact surface to lower stop screw (Item 7) -:
Screw in adjusting screw in cover until this causes the diaphragm to be lifted off by 0.5 mm (delivery correction possibility during induction); counterhold screw during this operation to prevent diaphragm damage (items 4 and 6).
4. Fit manifold-pressure compensator taking care to ensure that bell crank is positioned between washers of lower stop screw. To do so, move bell crank sideways and position approx. 45° upwards. Pay attention to O-ring! As a check, actuate stop lever - full-load control-rod travel must be set. If starting travel is attained, bell crank is not properly in position. If less than full-load control-rod travel is attained, enlarge dimension H accordingly.
5. Connect compressed air - adjustment test at 500 rpm: test start and end, correct at guide bushing of helical spring. Establish control-rod-travel difference (Item 8).
6. Measure induction delivery (0 bar) - correct if necessary in accordance with Item 3!
7. Check/adjust full-load delivery, engine-speed limitation, idle and starting fuel delivery.

* Dimension H
370 DR = 33.3 mm



Test Specifications Fuel Injection Pumps ①A and Governors

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VDT-WPP 001/4

8. Edition

En

PES 4A85 D 420 LS 2459 EP/RSV 375-1000 A 2 E 547 DR

supersedes 11.9.69, 23.4.70
Case 29.4.70
company A301 BD 19.6.70
engine 19.2.71
29.4.71
19.4.72

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15 + 0,1

Port closing at prestroke

mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3	4,1 - 4,5	0,3			
375	7,5	1,6 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 39	1040	10,8-11,6	without auxiliary spring			ca. 21	375	7,5	1000	0
	1050	9,6-10,0					150	19 - 21		
	1080	5 - 6,2					375	7,2-7,7	800	1,0 - 1,1
	1140	0,8- 2,6					600	0 - 1	400	2,0 - 2,2
②a	1200	0,3- 1,0	with auxiliary spring				300	11,6-14,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	mmRW	rev/min 8	Control rod travel mm 9
1100	70,5 - 72,5	1040-1055*	1090	12,9 - 18,9	100	12,9-13,5		375	16,0-22,0
600	85,5 - 89,5								
500	max. 88,0								

Checking values in brackets

* 1 mm less control rod travel than col 2

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8.74

J9

J9

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

3. Edition

En

PES 6A 85 D 420 LS 2460 EP/RSV 375-1050 A 2B 521 DR

superseded 29.10.70, 29.4.71
company Case
engine A 451 BD

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1050	11,4	7,5 - 7,9	4,0			
375	7,5	1,4 - 2,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1100 1180	10 2,4-4	without auxiliary spring			ca. 20	375	7,5	1050	0
2a	1090 1280 1130	11,5-12 0,2-1,2 6,2-7,2					150 375 600 280 480	19-21 7,3-7,7 0 - 1 10 - 12 1,2-3,5	800 500	0,9-4,0 1,0-1,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1050	75,0-78,0	1090-1105*	1150	11 - 17	100	120-130	375	14 - 20	
650	81 - 86								
550	max. 84								

Checking values in brackets

* 1 mm less control rod travel than col 2

8.74

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J10

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

3. Edition

PES 6 A 85 .. D 420 LS 2460 EP/RSV 375-1100 A 2 B 605 DR

supersedes 17.2.71, 28.4.71

company Case

engine A401 BD

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15±0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,5	6,1 - 6,2	0,3			
375	5,7	1,2 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control-lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min						rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7		8	9	10	11
ca.46	1150	9 - 9,6	without auxiliary spring			ca.24		375	6,5	1100	0
	1250	1 - 2,5						150	19 - 21	800	0,9 - 1,1
			with auxiliary spring					375	6,3-6,7		
	1140	10,0-10,6						600	0 - 1	450	1,3 - 1,7
	1200	4,4- 5,4						250	10,7-12,7		
2a	1300	0,2- 1,2						480	1,6- 3,9		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	60,5-62,5	1140-1155*		1200	8 - 14	100	120 - 130	375	12 - 18
600	69 - 74								
500	max. 72								

Checking values in brackets

* 1 mm less control rod travel than col 2

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8.74

J11

J44

Test Specifications Fuel Injection Pumps (1A) and Governors

40

3. Edition

En

PES 6 A 90 D 420 LS 2461

EP/RSV 375-1050A2B 723DR

supersedes

company Case

engine A 451 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	13,8+0,1	11,0-11,2	0,3			
375	7,0-7,2	1,4- 2,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1090 1100 1120	12,2-12,8 11,2-12,4 7,4-10	without auxiliary spring			ca. 17	375	7,1	1050	0
2a	1150 1250	4 - 5,8 0,2- 1,2				with auxiliary spring	150 375 450 550 320	19 - 21 6,9-7,3 2,8-4,5 0 - 1 11,6-14,6	400 800	0,1 - 0,3 0,1 - 0,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5		6	7	8	9
1050	109 - 113 (108 - 114)	1090-1105* (1085-1110)	1150	10 - 16		100	13,5-14,5	375	14,5-20,5
								cm ³ /	1000 H.

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 95 D 410 RS2479 EP/RSV 600-1100 A2B771L,

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

supersedes -
company John Deere
engine 6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1(-0,05)$ Port closing mark cyl. 1 : 14° after port closing
mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1100	9,8	8,8 - 9,1	0,3			
600	5,1	1,2 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1150 1200	8,8 6,0	without auxiliary spring			ca. 23	600	5,1	1100	0
2a							200	19 - 21		
							600	5,0-5,2		
							670-730	2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1100	87 - 91 (85 - 93)	1145-1150* (1140-1160)	1200	20 - 30	100 600	160 - 180 12 - 16			

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2479

EP/RSV 400-1100 A7B772L

supersedes

company John Deere

engine 6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1 \begin{pmatrix} +0,15 \\ -0,05 \end{pmatrix}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1080	10	8,9 - 9,1	0,3			
400	6	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7 8 9			3 Torque control rev/min mm 10 11	
ca. 70°	Control rod travel mm 2	Control rod travel mm rev/min 3	without auxiliary spring			rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
	1100	10				400	6		1080	0
	1115- 1125 1145	9 4,6	with auxiliary spring			100 400 520- 580	19 - 21 5,9-6,1 2		400 300	0 1,2 - 1,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
1080	cm ³ /1000 strokes 2	1115-1125 (1110-1130)				100 600 1175	cm ³ /1000 strokes 7	160 - 180 12 - 16 21 - 27	600	5,1	
	88 - 92 (86 - 94)										

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 95 D 410 RS2479 EP/RSV 400-1200 A2B773DL

supersedes
company John Deere
engine 6404 T

Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (+0,15
-0,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1200	9,5	8,9-9,1	0,3			
400	5,8	1,1-1,5				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1200	15,7-16,3	without auxiliary spring			ca. 23	400	5,8	1200	0
	1210	15,2-15,6					200	19 - 21	850	0,5 - 0,7
	1300	5,4- 8,7					750	0 - 1	600	0,5 - 0,7
2a	1380	1,7- 4	with auxiliary spring				350	8,8-11,6		
	1550	0,3- 1,7					400	5,7- 5,9		
							550	2,2- 4		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1200	88 - 90,5	1245-1255			100	160-180	600	5,1	
800	91,5- 96,5				400	11- 15			
					1295	21,5-31,5			

(increase by - 2,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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J15

J15

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 95 D 410 RS2479

EP/RSV 600-1100 A2B774L

supersedes
company
engine

John Deere
6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1 (+0,15)
-0,05 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,4	8,0 - 8,2	0,3			
600	5,3	1,2 - 1,6				
Port closing mark cyl. 1 : 14° after port closing						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			③ Torque control rev/min mm 10 11	
ca. 40	1150	8,4	without auxiliary spring			ca. 23	600	5,3	1100	0
②a	1200	5,0	with auxiliary spring				600	5,2-5,4		
							100	19 - 21		
							670-730	2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
1100	79-83	1150-1160 (1145-1165)				100	15,5-17,5	600	5,1
						600	12 - 16		
						1200	21 - 31		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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9.76

J16

J.16

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2500 EP/RSV 600-1100 A2B771L

Test-pressure line 6 x 2 x 600

supersedes -

company John Deere
engine 6404 T

Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1 \begin{pmatrix} +0,15 \\ -0,05 \end{pmatrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,8	8,8 - 9,1	0,3			
600	5,1	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			Control rod travel mm 11	
ca.40	1150 8,8 1200 6,0		without auxiliary spring			ca.23	600 5,1		1100	0
							100 19 - 21 600 5,0-5,2 670-2 730			

2a

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm ³ /1000 strokes 2		cm ³ /1000 strokes 3		cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		cm ³ /1000 strokes 7		Control rod travel mm 9	
1100	87 - 91	1145-1155 (1140-1160)				100	160-180				
						600	12- 16				
						1200	20- 30				

(increase by 2,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2500 EP/RSV 400-1100 A7B772L

supersedes -

company

John Deere

engine

6404 T

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1 \begin{matrix} (+0,15) \\ -0,05 \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	10	8,9 - 9,1	0,3			
400	6	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1100 1145	10 4,6	without auxiliary spring			ca. 23	400	6	1080	0
							100 400 520-580	19 - 21 5,9-6,1 2	400 300	0 1,2-1,8
②a	1115-1125	9,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1080	88 - 92 (86 - 94)	1115-1125 (410-1130)			100 400 1145	160 - 180 12 - 16 25 - 33			
(increase by : 2,0 cm ³ !)									

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

J18

J18

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS 2500 EP/RSV 400-1200 A2B773DL

supersedes -

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

company John Deere

engine 6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-0,1 $\left(\begin{smallmatrix} +0,15 \\ -0,05 \end{smallmatrix} \right)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,5	8,9 - 9,1	0,3			
400	5,8	1,1 - 1,5				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	1200	15,7-16,3	without auxiliary spring			ca. 23	400	5,8	1200	0
	1210	15,2-15,6					200	19 - 21	850	0,5-0,7
	1300	5,4- 8,7					350	8,8-11,6	600	0,5-0,7
	1380	1,7- 4	with auxiliary spring				400	5,7- 5,9		
	1550	0,3-1,7					550	2,2- 4		
							750	0- 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1200	88 - 90,5	1245-1255*			100	160 - 180	600	5,1	
800	91,5- 96,5	(1240-1260)			400	11 - 15			
					1295	21,5-31,5			

(increase by ± 2,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 95 D RS2500 EP/RSV 600-1100 A2B 774L

supersedes -
company John Deere
engine 6404 T

Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1 \begin{pmatrix} +0,15 \\ -0,05 \end{pmatrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,4	8,0 - 8,2	0,3			
600	5,3	1,2 - 1,6				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

600-1100 A2B771 L

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min mm 10 11	
ca. 40	Control rod travel mm 2	Control rod travel mm rev/min 3				ca. 23	600	5,3		
	1150	8,4	without auxiliary spring				100	19 - 21		
	1200	5,0					600	5,2-5,4		
2a	1100	ca. 9,2	with auxiliary spring				670-730	2		
	1170	4,6-5,6								
	1270	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
1100	79 - 83	1150-1160 (1145-1165)				100	15,5-17,5	600	5,1
						600	12 - 16		
						1200	21 - 31		

(increase by + 2,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col 2

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9.76

J20

J20

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 6 A 85C 420 LS 2264 EP/RSV 375-1050 A2B 667 D
D .. LS 2460

supersedes 1.12.72
company C a s e
engine A 451 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15±0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6	1,1 - 1,9				
	12	7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 45	1070	10,7	without auxiliary spring			ca. 22	375	6,7		
	1120	6,4					150	19 - 21	1050	0
	1170	2,6					375	6,4-7,0	800	0,7-0,9
2a	1090	10,2-10,8	with auxiliary spring				450	3,2-4,7		
	1150	4,6- 5,4					580	0 - 1	500	1,0-1,3
	1260	0,3- 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1050	70,5 - 72,5	1090-1105* (1088-1110)	1150	7,5 - 13,5	100	12,7-13,5	375	11 - 17	
650	81,5 - 85,5								
550	Max. 84,6								

Checking values in brackets

* 1 mm less control rod travel than col 2

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8.74

J21

J21

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 95 D 410 RS2479 EP/RSV 400-1100 A2B768DL
Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes
company John Deere
engine 6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1(-0,05)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1100	9,8	8,8 - 9,8	0,3			
400		1,2 - 1,6	0,3			

Port closing mark cyl.1:14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

400-1100 A2B768DL

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees rev/min 7 8 9			③ Torque control rev/min mm 10 11	
Control rod travel mm 2	Control rod travel min rev/min 3					Control rod travel mm 9				
ca.44	1100 15,7-16,3 1110 14,8-15,4 1220 4,6- 7,6		without auxiliary spring with auxiliary spring			ca.21	400 5,6		1100 0	
ca.43							100 19 - 21 330 9,4- 12 440 5,4-5,8 550 1,8-3,5 750 0 - 1		900 0,3-0,5 750 0,7-1,0 450 0,7-1,0	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
LDA 0,7 bar 1100 87 - 91 750+ 96 -101 550+ 63,5-70,5 (increase by : 2,0 cm ³ !)		1145-1155*		LDA 0,7 bar LDA 0 bar 750 96,0-101,0 550 63,5- 70,5		100 min 160 400 12 - 16 1200 20 - 30		100 5,6	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
8. Edition

En

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 B516DR

supersedes 7.7.73
company CASE
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,8	11,2 - 11,4	0,3			
375	5,7	1,6 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV 375-1100 A2 B516 DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 39	1150	9 - 10	without auxiliary spring			ca. 20	375	5,7	1100	0
	1140	10,4-11,2					150	19 - 21	800	0,1 - 0,4
			with auxiliary spring				375	5,6-5,8		
							450	1,5-3,4	400	0,1 - 0,4
							550	0 - 1		
2a	1220	1,2- 3,2					320	10 -12,4		
	1280	0,3- 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min									
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min		Control rod travel mm	
1	2	3	4	5		6	7	8		9	
1100	111 - 115	1140-1155	1200	12 - 18		100	13 - 14	375		16-22	
800	115 - 118	(1135-1160)								cm ³ / 1000	
700	max. 117										
(increase by ± 1,0 cm ³ !)											

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

J23

J23

Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4

8. Ausgabe

En

PES 6 A 95 ^C_D 420 LS 3024 EP/RSV 375-1100 A2 B 599 DR

supersedes 7.7.73
company CASE
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,8	11,2-11,4	0,3			
375	5,7	1,6- 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV 375-1100 A2 B599 DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 39	1140 1150 1180	10,5-11,2 9-10,2 0,3- 1,0	without auxiliary spring			18°	375	5,7	1100	0
②a	1220 1300	1,2- 3,2 0,3- 1,0					150 375 450 600 280	19 - 21 5,6-5,8 2,2-3,8 0 - 1 9,2-11,5	950 600	0,2-0,5 0,2-0,5

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1100	111-115	1140-1155 (1135-1160)	1200	12 - 18	100	13 - 14	375	16-22	cm ³ /1000
800	113-118								
700	max. 117								
(increase by + 1,0 cm ³ !)									

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4

8. Edition

En

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 659 DR

supersedes 7.7.73
company Case
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1100	12,35-12,45	13,6-13,8	0,4			
375	5,9	16,5-22,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV 375-1100 A2 B659DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 43°	1150	9,6-10,4	without auxiliary spring			ca. 20	375	5,9	1100	0
	1140	11-11,8					150	19 - 21		
	1200	2,6- 4,6					375	5,8 - 6		
2a	1280	0,2- 1,2	with auxiliary spring				450	1,8 - 3,5	750	0,3
	1170	6,4- 8					550	0 - 1		
							320	9,5 - 12	400	0,55-0,85

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	136 - 138	1140-1155 (1135-1160)	1200	21 - 27		100	13 - 14	375	16,5-22,5 cm ³ /1000
750	144 - 147								
650	max 147								

(increase by 1,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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K1

K1

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4
8. Edition

En

PES 6 A 95 D 420 LS 3024 EP/RSV 375-1100 A2 B697DR

supersedes 7.7.73
company CASE
engine A 504 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9	8,4 - 9,0	0,4			
200	6 15 6	4,0 - 5,0 16,5 - 17,8 1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV 375-1100 A2 B697DR

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 39	1150 1140 1170	9 - 10,4 10,6 - 11,4 6,4 - 7,6	without auxiliary spring			ca. 20	375	5,7	1100	0
(2a)	1280 1200	0,2 - 1,2 2,8 - 4,5					150 375 450 550 320	19 - 21 5,6 - 5,8 1,3 - 3,3 0 - 1 10 - 13	750 500	0,1 - 0,3 0,1 - 0,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit	(3a) Fuel delivery characteristics		Starting fuel delivery		(5)	(4a) Idle stop	
Test oil temp 40°C (104° F)		Note changed to 1 rev/min			Idle				
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	123 - 127	1140-	1200	22 - 28	100	13 - 14	375	16-22	
750	123 - 128	1155						cm ³ /	
650	max. 126							1000	
(increase by + 1,0 cm ³ !)									

(increase by 1,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col. 2

K2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 95 D 410 RS2479 400-1100 A2B769DL
Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes
company
engine

John Deere
6404 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9+0,1 \begin{pmatrix} +0,15 \\ -0,05 \end{pmatrix}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,8-9,9	7,5 - 8,0	0,4			
200	6 6	3,2 - 4,2 0,5 - 1,4				

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.44	1100 1180 1220	16,0 9,8 6,0	without auxiliary spring			ca.21	400	5,6	1080	0
ca.43	1100 1200 1330	ca.9,5 ca.4,7 0,3-1,0					200 400 500 720	19 - 21 5,3-5,9 3,3-4,4 0 - 1	450	0,7-1,0

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
LDA 1100	0,7 bar 87,5 - 89,5	1140-1150* (1135-1155)		LDA 750	0,7 bar 97,0 - 100,0	100 400 1200	159 - 179 12 - 16 19 - 29	100	5,6

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

1. Edition

En

PES 8 A 75 D 320 RS 2463

RQV 300-1500AB 912D (1)*

913D (2)*

914D (3)*

supersedes _

company: IHC

engine DV 550 C

Inlet pressure 2.5 bar (1) See note 1,2,3 -page 3!

(1-180 PS)*

(2-160 PS)*

(3-200 PS)*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,3)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,65-9,75	5,88-5,98	0,3			
	(± 0,05)					
300	9,65	0,1-1,5 - 3,7-4,6 -	cyl. 1- cyl. 2-	4-6-7) 3-5-8)		

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQV ..912 D (1)*

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 1a 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm 1
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1600 2000 1700 2000	15,0-18,5 0 9,0-14,0 0	-	-	-	ca. 10	250 400 500 650 860	6,5-8,2 2,9-4,5 2,3-3,3 1,1-2,1 0		
						3a				

Torque control travel a = 0,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min	cm ³ /1000 strokes	rev/min ④a	rev/min	cm ³ /1000 strokes ⑤b	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1500	58,8-59,8	1600-1610*	1000	51,0-53,0	100	110,0-132,0	1500	9,7
1000	50,5-52,5	1650: 7-8mm RW			300	15,4- 19,4 cyl. 2-3-5-8 cyl. 1-4-6-7	1000	10,0-10,1
							700	10,0-10,1
					100	0)		
					300	0)		

Change-over point
150-230 U/min
(130-250)

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 8 A 75 D 320 RS 2463

EP/RSV 450-1300 A O B 1088 D

supersedes

company

engine

IHC

DV 550 C

(172 PS)

Inlet pressure 2,5 bar (1)

See note 1,2,3 -page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,3)

mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,8	6,7-6,8	0,3			
	(± 0,05)					
300		0,1-1,5 - 3,6-4,2 -	- (cyl.1- - (cyl.2-	4-6-7) 3-5-8)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 52	1300	12,8-13,2	without auxiliary spring			ca. 30	450	5,7		
	1320	12,2-12,6								
	1500	4,8- 6,8					100	19 - 21	900	10,9-11,1
			with auxiliary spring				380	6,5- 21	540	10,9-11,1
	1580	1,5- 4,0					600	1,5-3,5		
2a	1700	0,2- 1,2					750	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1300	67,0-68,0	1385-1395*			100	112,0-135,0			
900	61,5-63,5	1475: 6-7 mm RW			450	8,0- 10,0			
					100	0			
					450	0			

Checking values in brackets

* 1 mm less control rod travel than col 2

11.75

K5

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 LS 3029; RSV 400-1100 A 2 B 2019 DL

supersedes -
company John Deere
engine 6466 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,95-2,05
Port closing at prestroke (1,9 -2,1) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,0	11,2-11,4	0,3(0,5)			
400	6,2	1,15-1,55	0,3(0,4)			

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,7				ca. 19	400	5,7	1100	10,95-11,05
	X =	3,5					100	19,0-21,0	750	10,75
ca. 43	1150	10,0					400	6,1- 6,3		
2a	1200	5,0					470-530	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	10,8,0-110,0	1145-1155*				100	170 - 200		
LDA	0,70 bar	(1140-1160)				400	11,5-15,5		
750	117,5-120,5					1200	25,0-35,0		
	0 bar								
500	81,0- 89,0								

Checking values in brackets

* 1 mm less control rod travel than col. 2

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10.79

K6

K6

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 4 A 85 C 420 LS 2054
RSV 300...850 A 5 B 136 DR

supersedes J.I. Case
company A 301 D
engine

0 400 874 023

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	9,0	6,55-7,05				
	6,0	2,35-3,15				
	15,0	14,0-14,8				
200	6,0	1,35-1,25				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
44°	865 880 920	9,2 8,0 5,2	without auxiliary spring			26°	300	5,5	830	0
2a	880	7,7-8,5				with auxiliary spring	100	19,0-21,0	700	0,2-0,5
	950	3 -4,2					300	5,2- 5,8	600	0,4-0,7
	1050	0 -1,0					400	1,5- 3,2	400	0,5-0,7
							500	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40° C (104° F)		6 Rotational- speed limit Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9			
830	75,0-77,0	850 - 865	600 450 935	78,0-81,0 76,0-80,0 13,5-22,5	100	85,0-95,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

K7

K 7/1

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 100 D 410 RS3025Z EP/RSV 400-1100 A2B765DL
RS3025 EP/RSV 400-1100 A2B766DL
RS3025 EP/RSV 400-1100 A7B767

supersedes -
company John Deere
engine 6404 A

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0+0,1(-0,05)$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,15-10,25	10,9-11,1	0,2			
400	6,3	1,35-1,75	0,3			

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

400-1100 A2B765DL / 3025Z

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 43	1100	10,15-10,25	without auxiliary spring			ca. 21	400	6,3	1100	10,2
	1145-1155	9,2					100	19 - 21	750	11,2
							400	6,2-6,4	500	11,95-12,0
							480-540	2,0		
2a	1200	4,8								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min				Idle			
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
LDA	0,7 bar	1145-1150* (1140-1160)				100	155,0-185,0	400	6,3
1100	109,0-111,0					400	135,0-175,0		
500	122,0-125,0					1200	25,8 - 35,0		
	0 bar								
550	70,5-76,5								
(increase by · 2,0 cm ³ !)									

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4

1. Edition

En

PES 6 P 110 A 720 RS 352 RQV300/600 - 1050 PA 359 KR

supersedes -
company: Mack
engine: ET 673
(260 HP)

359 KR = dimension PLE - 685-745 inch.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	15,8-16,4	0,4			
300	6,0	0,7- 2,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

... 359 KR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1050	16,4-18,8	-	-	-	ca. 19	250	9,8-11,5	300	0,8-2,1
	1150	4,2-10,0					400	2,2- 5,2	400-	2,9-4,4
	1200	0- 5,6					700	0,8- 2,0	550 =	5,8-6,2
	1260	0					830	0	900	7,9
						③a			1050	

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1050	173 - 175	1090-1100*	750	168,0-172,0	100	110,0-170,0	1050	12,5	
			500	134,0-140,0	300	19,0- 39,0	750	12,8	
					1155	29,0- 59,0	500	11,5	

Checking values in brackets

* 1 mm less control rod travel than col 2

4.77

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K9

K9 116

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 IHC 7,6 a
3. Edition

En

PES 6 MW 100/320 RS 1504

RSV 350 ... 1250 MW 2/305 R DHK 1 688 901 016

0 403 476 004

207 + 3 bar

supersedes 3.80
company IHC
engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 mm (from BDC) 10,5 mm RW
(3,15-3,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	7,3 ^{+0,2}	7,7 - 7,9	0,3(0,5)			
350	5,5-5,7	1,8 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.32	350	5,6	1100	7,3 - 7,5
							100	min.19	1000	7,8 - 8,0
ca.60		1300-1310= 6,4					350	5,5-5,7	800	8,5 - 8,7
2a		1360-1390= 3,1					430-490	= 2,0	500	8,6 - 8,8
		1450= 0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000	76,0-78,0 (75,0-79,0) 82,5-84,5 800 (81,5-85,5)		100	min. 140 18,0-22,0 (17,0-23,0) 25,0-37,0 (24,0-38,0)	350	5,6

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4
6. Edition

En

PES 6 P 100 A 720 RS 1010

EP/RSV 400-1050P2/367 DR

supersedes 12,74 (4)
company John Deere
engine 6531 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1050	12,5	14,2-14,4	0,3			
400	6,7	2,1- 2,7	0,3			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV .. 367 DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.43	1050	15,6-16,4	without auxiliary spring			ca.19	400	7,2	1050	0
	1100	6,2- 9,8					200	19 - 21	750	0,8 - 1
	1150	3,8- 5,2					350	11,2-14,0		
②a	1220	0,3- 2,6	with auxiliary spring				400	7,2	500	0,8 - 1
	1260	0,3- 1,5					500	4,8- 5,9		
							750	0,2- 1,2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to 1							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1,0	bar								
1050	142 - 144	1085-1095		750	159 - 162	100	160,0-190,0		
					0 bar				
				550	108 - 116				
				XX		400	21,0-27,0		
						1155	15 -35		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.75

K11

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K11

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Ppe 1010

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

-3-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
1010 with 367DR:	0,55	0,20	-0,2 mm -1,9 mm

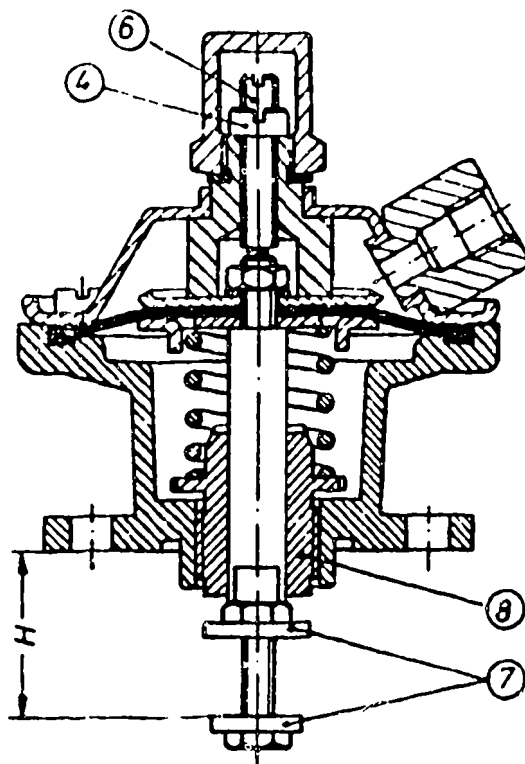
Notes

(1) when n = 500 rev/min and gauge pressure 1,0 bar (maximum full-load control rod travel)

Test sequence:

1. Basic setting of pump and governor (Section A-B) without manifold-pressure compensator.
2. Adjust full-load delivery - delivery indication max. charge-air pressure - with full-load stop screw of governor. Measure fuel-delivery characteristics at 750 rpm; correct if necessary with torque-control retainer.
3. Pre-adjustment of manifold-pressure compensator: set dimension H - contact surface to lower stop screw (Item 7) -:
Screw in adjusting screw in cover until this causes the diaphragm to be lifted off by 0.5 mm (delivery correction possibility during induction); counterhold screw during this operation to prevent diaphragm damage (items 4 and 6).
4. Fit manifold-pressure compensator taking care to ensure that bell crank is positioned between washers of lower stop screw. To do so, move bell crank sideways and position approx. 45° upwards. Pay attention to O-ring! As a check, actuate stop lever - full-load control-rod travel must be set. If starting travel is attained, bell crank is not properly in position. If less than full-load control-rod travel is attained, enlarge dimension H accordingly.
5. Connect compressed air - adjustment test at 500 rpm: test start and end, correct at guide bushing of helical spring. Establish control-rod-travel difference (Item 8).
6. Measure induction delivery (0 bar) - correct if necessary in accordance with Item 3!
7. Check/adjust full-load delivery, engine-speed limitation, idle and starting fuel delivery.

* Dimension H
370 DR = 33.3 mm



Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 8 P 100 A 921/5 RS 286 EP/RSV 350-1200 PO/394 DR

s.WPP 110/2, 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°!

supersedes -

company

IHC - USA

engine

DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8±0,1

mm (from BDC)

(Checking + 0,15)
- 0,05

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	8,6	9,5-9,7	0,4			
350	5,6	1,65-2,25	0,6			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PO/392 DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49	1300	9,5-11,2	without auxiliary spring			ca. 26	350	6,0	1180	0
	1350	4,8-8					150	19-21	950	0,5
	1250	13-14					350	6,0	500	0,5-0,8
2a	1390	1,2-5,4	with auxiliary spring				300	7,4-8,2		
	1200	15,8-16,2					400	3,2-4,4		
	1440	1,2-2,0					470	1,2-2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40° C (104° F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1200	95,0-97,0	1250-1260 (1245-1265)	1310	13,0-33,0	100 350	min. 170 16-23			
850	101 - 107 (99 - 109)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

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K15

K15

Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT- WPP 001/4

1. Edition

En

PES 8 P 100 A 921/5 RS 286 EP/RSV 350-1050 PO/409 DR

s. WPP 110/2, 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°!

supersedes -

company

engine

IHC - USA

DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

(Checking + 0,15
- 0,05)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	9,8	11,1-11,3	0,3			
350	5,4	1,65-2,25	0,66			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

P 0/409 DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 49	1050	15,7-16,3	without auxiliary spring			ca. 26	350	6,0	1030	0
	1150	6,6-9,4					150	19-21	670	1,3-1,4
	1100	11,8-13					200	11,4-21	500	1,3-1,4
2a	1200	1,0-5,2	with auxiliary spring				350	6,0		
	1240	1,0-2,0					430	1-2		
							300	8,2-9,6		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1050	111,0-113,0 (109,0-115,0)	1090-1100*		750	123,0-127,0 (121,0-129,0)	100	min. 170 16 - 23		
						350			
						1150	15,0-35,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

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K16

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

2. Edition

PES 6 P 110 A 320 RS 317 RQV 375-1100 PA 200 KR

supersedes

company: Allis Chalmers

engine Typ: 11 000

Test instructions for RQV ... K governors WPP 001/4-3rd supplement
-Testing with EFEP 182 ("S-nozzles")

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1

mm (from BDC)

(Checking + 0,15
- 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	10,7	13,8-14,0	0,4			
375	4,5	1,0- 1,6	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1100	15,2-17,8	-	-	-	ca. 20	375	4,4-4,6	300	0 - 1,4
	1140-1150	9,7					100	min. 14	400	2,8-3,4
	1215-1245	4,0					320-520		800	5,0-5,4
	1300	0- 1,0					530- 590	2,0	1130	830
									1300	end
									1390	(11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,6 bar							
1090	138,0-140,0	1140-1150*			100	95-135	1090	10,7
600	150 - 154				375	10,0-16,0	600	11,1-11,2
Change-over point 200-300U/min ./.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 **40**

1. Edition

En

PES 6 P 110 A 320 RS 318

RQV 300-1025 PA 173 KR

supersedes
company Allis Chalmers
11 000
engine.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

(+ 0,15)
(- 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1015	8,7	9,0-9,2	0,4			
300	5,3	1,9-2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

RQV 300-1025 PA 173 KR

RQV 300-1000 PA 217 KR

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1025 1300 1055- 1065 1095- 1125	15 -17,8 0 - 1,0 7,7 4,0				ca. 10	300 100 400- 460 320- 390	5,2-5,4 min. 6,8 2,0 --	380 550 1000	1,8-2,6 3,8-4,6 7,5-7,9

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
318 /	173 KR:				100	95 - 135	1015	8,65-8,75
1015	90,0-92,0	1055-1065			300	19,0-25,0	700	9,35-9,45
700	93 - 97							

Change-over point
150-250 min⁻¹

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

Testoil-ISO 4113

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K18

K48

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

1. Edition

40

En

PES 6 P 110 A 320 RS 318

300-1000 PA 217 KR

supersedes

company

engine

Allis Chalmers
11 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) $\begin{matrix} + 0,15 \\ - 0,05 \end{matrix}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	10,0	12,0-12,2	0,4			
300	5,3	1,8- 2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

RQV 300-1025 PA 173 KR

RQV 300-1000 PA 217 KR

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1000 1030 1040 1085 1115 1250	15,2-17,8 9,0 4,0 0,0-1,0	-	-	-	ca. 10	300 100 400- 460 320- 390	5,2-5,4 min 6,8 2,0 --	380 550 1000	1,8-2,6 3,8-4,6 7,5-7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
318 / 217 KR: 990 700	120-122 121-125	1030-1040*			100 300	95,0-135,0 18,0- 24,0	990 700	10,0 9,95-10,15

Change-over point 150-250 min⁻¹ ./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

Testoil-ISO 4113

K19

K19

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 **40**
2. Edition

En

PES 8 P 100 A 921/5RS 286

RQV 300-1300 PA 304 KR

supersedes -

company IHC - USA

engine DVT 800

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) (+0,15 - 0,05 - Ckecking)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	10,2	11,4-11,6	0,3			
300	5,0	1,7- 2,1	0,3			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV .. 304 KR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1320	15,0-17,5	-	-	-	ca. 10	100	7-8	250	0,4-1,4
	1400	9,5-13,7					400	2,2-3,8	500	2,8-3,4
	1520	0,0- 7,3					540	0,2-1,3	800	4,4-4,8
	1640	0					680	0	1320	8,2
							300	4,1-6,2	1520-1640	end (11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,85 bar				100	180-230	1300	10,2
1300	114 - 116	1340-1350*			300	17- 21	900	10,4
	(112 - 118)	(1335-1355)			Change-over point 170-240 min ⁻¹		700	10,1
900	118 - 124							
800	84 - 88							

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.75

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K20

K20

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

2. Edition

PES 8 P 100 A 921/5 RS 286 RQV 300-1300 PA 305 KR

supersedes

company

engine

I H C - U S A
DVT 800

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+ 0,15 - 0,05 - Ckecking)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5	10,7 - 10,9	0,4			
300		1,5 - 2,1	0,3			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQV .. 305 KR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1320 1400 1520 1640	15,0-17,5 9,5-13,7 7,3 0	-	-	-	ca. 10	100 400 540 680 580 300	7 - 8 2,2-3,8 0,2-1,3 0 0 - 1,1 4,1-6,2	250 500 800 1320 1520 1640	0,4-1,4 2,8-3,4 4,4-4,8 8,2 end (11)

Torque control travel a = mm --- Sect. C, Col. 8

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a) rev/min		Fuel delivery characteristics high idle speed (5b) rev/min		Starting fuel delivery Idle switching point (6) rev/min		Torque-control travel Control rod travel mm (5) rev/min	
1 rev/min	2 cm ³ /1000 strokes	3 rev/min	4 rev/min	5 cm ³ /1000 strokes	6 rev/min	7 cm ³ /1000 strokes	8 rev/min	9 mm	
LDA 1300 850 800	0,85 107-109 128-134 83-91	1340-1350* (1335-1355)			100 300 Change-over point 170-240 min-1	190 - 230 15 - 21	1300 850 700	9,5 11,9 10,5	

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.75

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

2. Edition

En

PES 8 P 100A 921/5RS 286 RQV 300-1300 PA 308

Test equipment as per VDT-WPP 110/2 3. Edition

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

supersedes

company: I H C - U S A

engine DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) (+ 0,15 - 0,05 - checking)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	12,15-	13,8-14,0	0,4			
300	12,25 5,0	1,6- 2,0				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQV ..308 KR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1320	15,0-17,5	-	-	-	ca. 10	100	7 - 8	250	0,4-1,4
	1400	9,5-13,7					400	2,2-3,8	500	2,8-3,4
	1520	0- 7,3					500	0,8-2,1	800	4,4-4,8
	1640	0					580	0 -1,1	1320	8,2
						3a	680	0	1520	end
							300	4,1-6,2	1640	(11)

Torque control travel a = --- mm
--- Sect. C, Col. 8

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,85 bar							
1300	138 - 140	1340-1350*			100	190 - 230	1300	12,2
900	132 - 138				300	16 - 20	900	11,7
800	86 - 97						700	11,2
					Change-over point 170-240 min ⁻¹			

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 8 P 100 A 921/5RS 286 RQV 300-1300 PA KR 309..

Test equipment as per VDT-WPP 110/2 3. Edition

supersedes

company 1 H C - U S A

engine DVT 800

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1

mm (from BDC)

(+0,15
-0,05) Checking)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,3	12,9-13,1	0,4			
300		1,7- 2,3	0,6			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

RQV..309 KR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca.66	1320 1400 1640 1520	15,0-17,5 9,5-13,5 0 0 - 7,3	-	-	-	ca.10	100 400 540 680 300 580	7 - 8 2,2-3,8 6,2-1,3 0 4,1-6,2 0-1,1	250 500 800 1320 1520 1640	0,4-1,4 2,8-3,4 4,4-4,8 8,2 end (11)

Torque control travel a = mm
--- Sect. C, Col. 8

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b ④a	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,85 bar	1340-1350*			100	min 170	1300	11,3
1300	129 - 131				300	17 - 23	900	11,3
900	127,5-133,5				Change-over point			
	0 bar				170-240 min ⁻¹			
800	103 - 111							

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.75

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K23

K23

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4

1. Edition

En

PE 6 P 120 A 420 LS 314 RQV 300-950 PA, 314 KR

supersedes

company

engine

Allis Chalmers
25 000

Testing with T nozzles and fuel lines 8x2x1000 according to WPP 110/2!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8+0,1 mm (from BDC) + 0,15 - 0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	9,6	20,4-20,6	0,6			
300	4,8	1,75-2,35	0,6			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	③	rev/min 10	mm 11
ca. 66	950 1000 1100 1150 1250	15,2-17,5 12 -15,1 4,5- 9,5 0 - 6,6 0		-	-	-		ca. 10	270 350 380 400	5,8- 8 3,0-5,2 2,5-3,8 2,2-3,8		400 550 1000 1200 1290	1,8-2,7 3,8-4,2 7,5-7,9 end (1)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
314 mit 314 KR: 950 750	204-206 194,5-197,5	990-1000*				100 300	130 - 170 17,5-23,5	750 950	9,7 9,6
						Change-over point 150-250 min ⁻¹		./.	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

K24

K24

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4

1. Edition

En

PES 6 P 110 A 420 LS 3037

RSV 425-1100 P2/424DR

supersedes

company

engine

IHC
DTI-817C
420 HP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,0	25,7 - 25,9	0,4			
425	5,5	3,0 - 3,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	1300	0,3-1,7				ca. 21	425	5,5	1100	0
	X=3,4						100	20,0-21,0	700	0,7-0,9
							200	11,0-21,0		
ca. 43		1140-1150=13+0,5					430-490	2,0	500	0,7-0,9
②a		1195-1225=4,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 1100 700	1,00 bar 257-259 264-270 0 bar	1140-1150*	LDA	1,00 bar		100	180-205		
			1195-1225	4,0 mm		425	33- 39		
800	149-157								

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.79

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L1

LX

Test Specifications Fuel Injection Pumps **(1A)** and Governors

VDT-WPP 001/4
Edition 29.8.74

40

En

PES 6A 90 D 420 LS 2461

RSV 375-1050 A2B567DR

superseded 11.3.70, 10.2.71
company Case 22.4.71
engine A451ZDT

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,5	9,6-9,7	0,3			
375	7,4	15 - 22	0,2			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 39	1100	10 - 11,4	without auxiliary spring			ca. 10	375	7,4	1050	0
	1090	12,4-12,8					150	19 - 21	900	0,2 - 0,3
	1280	0,2- 1,2					375	7,4		
(2a)	1130	6,2- 7,4	with auxiliary spring				180	1 - 4	500	0,3 - 0,6
	1200	1 - 3					600	0 - 1		
							320	11 - 13,6		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min		rev/min		Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1050	96 - 97	1090-1105	1150	12 - 18	100	12 - 13	375	15-22	
750	99 - 102	*						cm ³ /1000	
650	max. 102							strokes	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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L2

L2

Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4

10. Edition

En

PES 4A 95 D 420 LS 3023

RSV 375-1100 A2B651DR

supersedes (9) 31.7.73

company Case

engine A 336 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3	12,2-12,5	0,3			
375	5,9	1,7- 2,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. 651 DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 38	1140	11 -11,6	without auxiliary spring			ca. 16	375	5,9	1100	0
	1180	4,6- 6,2					150	19 - 21	800	0,2-0,3
	1300	0,3- 1,0					375	5,8-6,0	460	0,2-0,5
②a	1220	1,2- 3	with auxiliary spring				450	1,4-3,4		
	1150	9-10,2					550	0 - 1		
							330	9,8-13		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	122 - 125	1140-1155*		1200	13 - 19	100	13 - 14	375	17-21
750	122 - 128	(1135-1160)							cm³ /
650	max. 126								1000
(increase by 1,0 cm³!)									strokes

Checking values in brackets

* 1 mm less control rod travel than col 2

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12.74

L3

63c

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

4. Edition

En

PES 6 P 110 A 720 RS 296 EP/RSV 400-1050 P0/414 DR

supersedes 6.75

company John Deere

engine 6619 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1

mm (from BDC)

(Checking +0,15
-0,05)

see page 3

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,8	18,7 - 19,0	0,2			
400	6,8	1,9 - 2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. P 0/396DR, 414 DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 39	1050	15,6-16,2	without auxiliary spring			ca. 20	400	6,3		
	1100	8,4-10,8					100	19 - 21	1050	0
	1150	3,6- 5,6					400	6,8	680	0
2a	1200	0,3- 2,9	with auxiliary spring				520-	2	500	0,3-0,5
	1250	0,3- 1,5					580			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	5	6	7	8	9
LDA	1,0 bar	1095-1105	1150	47 - 57		100	min. 170	400	19-25
1050	187 - 190	(1090-1110)						cm ³ /	1000
	185 - 192)								Strokes
630	193 - 197								
	191 - 199)								
550	112 - 120								

Checking values in bracket:

* 1 mm less control rod travel than col 2

5.76

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L4

L4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 6 P 100 A 720 RS 1010 EP/RSV 400-1050 P7/413DR

supersedes
company John Deere
6531
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4+0,1 mm (from BDC) (+0,15
-0,05)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1040	13,1	14,9 - 15,1	0,3			
400	7,1	1,6 - 2,0	0,3			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. P2/411D

1 Upper rated speed rev./min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 38	1070 1110	12,1 4,9	without auxiliary spring			ca. 17	400	6,7	1040	0
							100	19 - 21	750	0,7
							400	6,7		
							450-500	2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1065-1075	1100	23 - 33		100	min. 170	400	16 - 20
1040	149 - 151								
750	163,5-166,5								
(increase by 2,0 cm ³ !)									
								cm ³ /1000 Strokes	

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.77

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

4. Edition

En

PES 6 P 110 A 720 RS 305 EP/RSV 400-1050 P2/415DR

supersedes 6.75

company John Deere

engine 6619

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(Checking +0,15
-0,05)

see page 3

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,7	16,0-16,2	0,4			
400	6,3	1,9-2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. P 0/396DR, 414 DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7	8	mm	10	mm
ca. 39	1050	11,7	without auxiliary spring			ca. 20	400	6,1	1050 730 650	0 0 0,5 - 0,7
	1100	10,7					100	19 - 21		
	1150	6,0					400	6,1		
							570	2,0		
							630	2,0		
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA	1,0 bar	1095-1105	1150	47 - 57	100	min. 130	400	19 - 25	
1050	160 - 162								
650	170 - 174								
	0 bar								
550	88 - 96								

Checking values in brackets

* 1 mm less control rod travel than col 2

5,76

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L6

LC

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

1. Edition

En

PES 6 P 110 A 720/3 RS3036 RQV 300/600-900 PA453KR

supersedes -

company: M a c k

engine ETA 676 E

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4	19,3 - 19,5	0,4			
300	5,5	1,5 - 2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	970	16,2-17,8	-	-	-	ca. 18	Set 300 400 570- 630= 250	7,9-8,1 3,8-5,2 2,0 9,8-11,3	300 600 960	1,2-2,4 4,5-5,0 8,3
ca. 54	13,4 4,0 0,1	940 - 950 1100-1130 1200				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	1,6 bar	940-950*			100	120 - 280	900	14,4
900	193-195				300	15,0-25,0	800	14,45-
600	230-234						700	14,65
600	129-132						600	14,7-14,8
	without pressure						500	15,2-15,3
								14,95-
								15,05

Checking values in brackets

* 1 mm less control rod travel than col. 2

10,79

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Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4
1. Edition

En

PES 6 A 100 D 410 RS3027 EP/RSV 400-1100 A2B789DL

supersedes
company John Deere
engine 6466A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,95-2,05(1,90-2,10)

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,9	10,7-10,9	0,3(0,6)			
400 525/550	+0,1 6,2-6,4 -	1,1- 1,5 C, 4-5	0,3(0,5) 0,4(0,7)			

Port closing mark cyl. 1 : 15° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 30	400	6,3	1100	0
	x	= 5,75					100	19 - 21		
ca. 72	1100	15,7-16,3					400	6,2-6,4	525	1,45
2a	1200	6,2- 9,4					480-600	1,8-4		
	1250	1,4- 5,4					550	0-1		
	1350	0,3- 1,7					320	10,6-13,2		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1100	105 - 110 (103 - 112)	1145-1155 (1140-1160)	1200	20,5 - 35,5	100	150-180	400	11-15	
525	116 - 119						cm ³ /	1000	Strokes
550	82 - 86								

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 6 A 100 D 420 LS3024 EP/RSV 375-1050 A2B785DR

supersedes -
company Case
engine A 504 BDT
(210 BHP)

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,2	14,3-14,6	0,3(0,6)			
375	(+0,1) 6,2 (±0,1)	1,55-2,15	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees rev/min Control rod travel mm 7 8 9			③ Torque control rev/min Control rod travel mm 10 11	
ca. 42	1085	11,6-12,4				ca. 22	375	6,2	1050	0
	1100	10 - 11	without auxiliary spring				150	19 - 21	700	0,1-0,3
	1140	5,8- 7					375	6,2	500	0,1-0,3
②a	1180	2,2-4	with auxiliary spring				450	2,4-4,2		
	1250	0,2-1,2					550	0 - 1		
							280	10,4-12,8		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
1050	142 - 147 (140 - 149)	1090-1100* (1085-1105)	1165	25 - 31	100	130-140	375	6,1	
700	143 - 148 (141 - 150)								
600	max 147								

Checking values in brackets

* 1 mm less control rod travel than col 2

3.76

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L9

L9

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1100 A2 B765DL
Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes -

company John Deere
engine 6404 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,00-2,10

Port closing at prestroke (1,95-2,05)

mm (from BDC)

Port closing mark cyl. 1 : 14° after port closing

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery with 765 DL cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10	10,4-10,6	0,3(0,6)			
	(+0,1) 6,3 (-0,1)	1,2-1,6	0,3(0,5)			
750/550-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

400-1100 A2B765DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel (+0,1) mm 11
ca. 43	1100 1110	15,7-16,3 15 - 15,8	without auxiliary spring			ca. 21	400	6,3		
	1200 1350 1270	6,5- 9,5 0,3- 1,7 0,6- 4,2					200 400 480 340 600	19 - 21 6,2-6,4 2,0- 4 9,5-12 0 - 1	1100 750 500	0 0,5-0,6 0,5-0,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40 °C / 104 °F		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA	0,8 bar	1145-1155	1200	26,5-36,5	100	155-175	400	6,3	
1100	103 - 107 (101 - 109)	(1140-1160)							
750	112 - 117								
550	61 - 68								

Checking values in brackets see page 2

* 1 mm less control rod travel than col. 2

9.76

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L10

L10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1050 A2 B786DL
Test-pressure line 6 x 2 x 600
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes -
company John Deere
engine 6404 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,00-2,10
Port closing at prestroke (1,95-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,1	11,45-11,65	0,3(0,6)			
400	(+0,1) 6,6 (±0,1)	1,3 - 1,7	0,3(0,5)			

Port closing mark cyl. 1 : 14" after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 43	1050	15,7-16,3	without auxiliary spring			ca. 21	400	6,6	1050	0
	1060	14,8-15,6					100	19-21	750	0,9 - 1
	1150	6,5- 9,5					400	6,6	900	0,1 - 0,3
	1210	1,2- 4,8					480	1,8-3,8		
2a	1300	0,2- 1,2	with auxiliary spring				600	0,1		
							340	9,6-11,6		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		Note		Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	rev/min 9	mm 10
LDA	0,8 bar	1095-1105			100	155 - 185			
1050	113 - 117,5	(1090-1110)							
750	121 - 126								
550	49 - 55		1150	22 - 32			400	6,3	

Checking values in brackets see page 2

* 1 mm less control rod travel than col. 2
9.76

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 **40**
1. Edition

En

PES 8 A 75 D 320 RS 2463 RQV 300-1500 AB 913 D (2)*
Inlet pressure 2,5 bar (1)
See note 1,2,3 -page 3!

supersedes
company: IHC
engine: DV 550 C
(1 - 180 PS)*
(2 - 160 PS)*
(3 - 200 PS)*

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,35	4,6 - 5,3	0,3			
1000	(±0,05) 10	4,35-4,95				
300	9,3	0,1 - 1,5 - 3,6 - 4,6 -	-(cyl.1- -(cyl.2-	4-6-7) 3-5-8)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV.. 913DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca.68	1600	15,0-18,2	-	-	-	ca.10	200	7,4-8,2	1600	8,3
	2000	0					450	2,7-3,4		
ca.65	1700	9 - 14					600	1,5-2,6		
	1800	3 - 9,5					870	0		
							300	5,4-7,3		

Torque control travel a = 0,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1500	49 - 51	1605-1615	1650	7 - 8 mm	300	17 - 21	1500	0
100	46 - 49	7-8mmRW	Change-over point 150-230U/min (130-250)		300	cyl.2-3-5-8 0 cyl.1-4-6-7	1000	0,45- 0,65
							700	0,45- 0,65

Checking values in brackets

* 1 mm less control rod travel than col 2

L12

L12

BOSCH

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4.75

Test Specifications Fuel Injection Pumps (1A) and Governors

40
VDT-WPP 001/4
2. Edition

En

PES 6 A 85 D 420 LS 2460 EP/RSV 375-1100A 2 B 636 DR

supersede 22.3.73
company Case
engine 504 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,8	9,2 - 9,3	0,3			
375	7,9	1,8 - 2,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
ca. 47	Control rod travel mm 2	Control rod travel mm rev/min 3	without auxiliary spring			ca. 23	rev/min 8	Control rod travel mm 9	1100 900 500	0 0,7-0,8 0,9-1,0
	1150	11,4-12,4					375	7,9		
	1180	6,4- 8,4					150	19 - 21		
	1140	12,6-13,3					375	7,7-8,1		
2a	1220	1,6- 4,4	with auxiliary spring				620	0 -1,0		
	1300	0,3- 1,0					280	11,8-14		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm rev/min 8	
1100	91 - 94	1140-1155*	1200	14 - 20	100	12,5-13,5	375	18-24 cm ³ / 1000 strokes	
750	102 - 107								
650	max. 106								

Checking values in brackets

* 1 mm less control rod travel than col 2

8.74

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